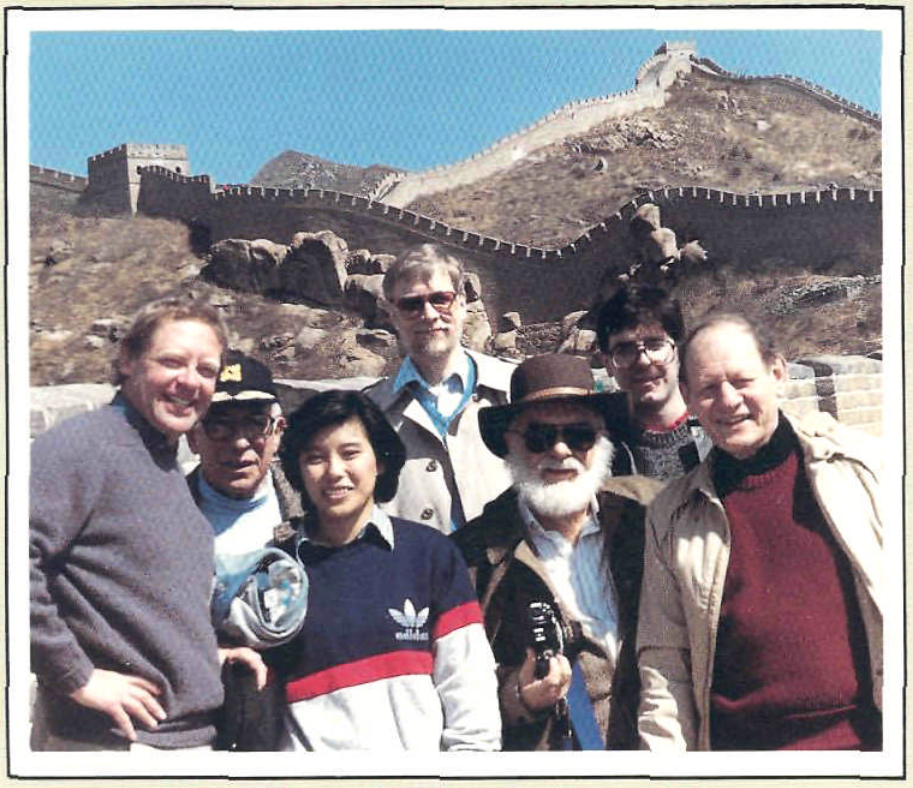
the Skeptical Inquirer

CSICOP IN CHINA



Testing China's Psychics

The Appeal of the Occult
Hypnosis and Reincarnation
Pitfalls of Deception • Continental Drift
Health Quackery • Psychic Crimebusting

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ON THE COVER: Photo by Ding Jian. From left to right, Kendrick Frazier, Philip J. Klass, Wu Xiaoping, James Alcock, James Randi, Barry Karr, and Paul Kurtz.

News and Comment

Survey Finds Newspaper Editors Lack Scientific Sophistication

TO JUDGE by the results of a recent survey, many American newspaper editors appear to have missed out on some of the biggest news stories in history—such as the discoveries that the earth is round, that it revolves around the sun, and that it is extremely old. For example, only half the editors responding disagreed strongly with the statement "Dinosaurs and humans lived contemporaneously." Biologist Michael Zimmerman, author of the study, says that what it revealed about editors' views on scientific issues "was not in the least encouraging."

Zimmerman designed the study to find out what newspaper editors know about the creation/evolution debate and to investigate newspapers' editorial stances and news coverage of the issue. He emphasizes that his aim was not to detect whether editors' personal opinions result in editorial bias, but rather to help determine "the magnitude of the basic misconceptions held by one educationally elite group of people." A total of 534 out of 1,563 newspaper managing editors responded.

In the first part of his survey, Zimmerman asked editors to agree or disagree with statements that reflected some of the basic tenets of "creation science." Among them were the following:

- "The Earth is approximately 6,000 to 20,000 years old." (One third of respondents did *not* disagree strongly.)
- "The Earth is approximately 4 billion to 5 billion years old." (Fewer than half—42 percent—agreed strongly.)
- "Dinosaurs and humans lived contemporaneously." (Slightly more than 37 percent either agreed or stated they had no opinion.)
- "Adam and Eve were actual people." (Only 41 percent strongly disagreed.)
- "Every word in the Bible is true." (Only 57 percent strongly disagreed.)

Zimmerman says there were no differences in the responses from editors of large and small newspapers.

The project grew out of previous surveys on creationism that Zimmerman, a professor of biology at Oberlin College, Ohio, conducted of Oberlin liberal arts students, high school biology teachers and school board presidents in Ohio. Zimmerman edits the newsletter of the Ohio Center for Science Education and became involved with the creationism issue ten years ago "because it's so central to the teaching of science in general and biology in particular."

Zimmerman reported the results of his survey in an "op-ed" article published in the *Washington Post,* "Newspaper Editors Are Dummies" (January 26, 1988, p. A23); the version in the *Washington Post National Weekly Edition* (February 1-7) bore the even more provocative title "Newspaper Editors Are Back in the Age of Dinosaurs."

He concluded: "It is imperative that

members of our democratic society possess enough scientific sophistication to enable them to make rational choices about increasingly pervasive scientific issues. Unfortunately, preliminary indications suggest that many American newspaper editors have not yet achieved that level of sophistication. . . . We do have a pressing problem when people take Fred Flintstone more seriously than Carl Sagan."

—Lys Ann Shore

Lys Ann Shore, a writer and editor, reports frequently for this column.

MJ-12, a Curious Business

Following CSICOP's press release last August denouncing the "MJ-12 Top Secret/Eyes Only" crashed-saucer papers as counterfeit, William L. Moore, who had earlier released the papers that seemed to confirm claims made in his book, revealed that he had additional "documentation" that would substantiate the MJ-12 papers. (See *SI*, Winter 1987-88, pp. 137-146; Spring 1988, pp. 279-288.)

Moore indicated to his friends in the UFO movement, at least some of whom shared CSICOP's doubts, that this new material would be made public by late 1987. But as that time approached Moore indicated that release would be delayed until early 1988. As of this writing (mid-April), Moore has yet to deliver.

Nor does it seem likely he ever will, judging from the explanation for the delay offered in the April issue of *Fate* magazine, in a long feature article by Jerome Clark. Clark is one of Moore's close friends and one of the strongest supporters of the MJ-12 papers. Clark also is editor-in-chief of the *International UFO Reporter*, published by the Hynek Center for UFO Studies (CUFOS).

Clark explains that when Moore and his associate Shandera informed their "sources"—who are claimed to be highly placed USAF and intelligence officials—that they were "about to release what they have—a story of some strange encounters with agents of the U.S. government, a videotape, a few more documents . . . ," their sources threatened to *withhold* "some very interesting stuff."

Curious business. These highly placed sources seemingly leak top-secret UFO information to Moore and Shandera because they want it made public. But when Moore and Shandera propose to do so, their sources threaten to cut them off—according to what Clark was told by Moore. Clark does not seem to notice this obvious inconsistency.

Clark explains why Moore and Shandera put such great trust in their alleged sources. Moore claims that one of them called him on the phone in the fall of 1983 to report that Korean Air Lines Flight 007 "had been shot down over the Soviet Union—before the story hit the press." One of these sources also claims that MJ-12 is currently headed by Vice President George Bush—not related to Dr. Vannevar Bush, who is claimed to have originally organized MJ-12 in 1947.

According to Moore and Shandera they were alerted by their sources to visit the National Archives in mid-1985, where they would discover a desperately needed memo from Eisenhower aide Robert Cutler to the USAF's Gen. Nathan Twining, which briefly mentioned MJ-12. (The National Archives disavowed the authenticity of the memo in July 1987.)

The alert, according to Clark, came in the form of "cryptically written guidance on two separate postcards, each manufactured in Ethiopia, each mailed from New Zealand." (One might expect that experienced intelligence sources would opt for a more secure means of communication than postcards.) Clark does not indicate whether he examined these postcards or whether he urged that they be made public.

The MJ-12 papers include an alleged

briefing document, dated November 18, 1952, intended to inform President-elect Eisenhower of the current UFO situation. The briefing document mentions that the bodies of four extraterrestrials had been recovered from a flying saucer that had crashed at Roswell, New Mexico, five years before.

But the briefer completely forgot to tell Eisenhower that a second saucer had crashed at Roswell in 1949 and that one of its occupants *had survived* and was "taken to a safe house at Los Alamos," according to one of Moore's sources cited in Clark's article. The creature "died of unknown causes on June 18, 1952," only a few months before the MJ-12 briefing document allegedly was written. Perhaps this explains the oversight.

According to this Moore source, at least two more ETs were recovered alive in subsequent years. Then, according to Clark, "this past October, [Moore and Shandera's] sources told them to collect some expensive camera equipment and fly to Washington, where they would be met by someone who would take them to a certain place in a wooded area. There they would be permitted to interview and film" a live ET.

One might think Moore or Shandera would question why such an interview would be held in a "wooded area" instead of inside a heavily guarded building, but seemingly they did not. According to Clark, when Moore and Shandera "arrived in Washington, no one was waiting" to meet them.

Because of such (alleged) disappointments from trusted sources, Moore and Shandera have grown weary of pursuing the story of crashed saucers, alien bodies, and live ETs, according to Clark. As a result, he indicates, both men recently have decided to retire from the field of UFOlogy and get "jobs that . . . pay salaries." This is confirmed by others who have recently talked to Moore.

If Clark is disappointed, he does not show it. Clearly, nothing can shake his confidence in the MJ-12 papers, crashed saucers, or ETs—either dead or alive. As Clark recently wrote to a fellow-believer, "these are *very* interesting times." They are indeed—for the credulous!

—*Philip J. Klass*

'Mars Face,' Touted to Investors, Draws Vigorous Scientific Reply

Readers of the Winter 1987-88 quarterly report of the investment firm Alan Shawn Feinstein Associates, Cranston, Rhode Island, were confronted with an unconventional "Important Announcement." Feinstein says it makes his earlier tips about nuclear disarmament and the August 1987 stock-market crash "pale by comparison." The momentous subject? A spacecraft photo of the surface of Mars with "unbelievable implications." "It is a monument of a human face" a mile wide "from crown to chin," says Feinstein. "Exactly six miles from it are several five-sided buildings. All precisely aligned. Each one large enough to house one million people."

"This is no joke," Feinstein insists. "I have seen the picture." He says it may be the "greatest discovery of the century," and goes on to hint of a space race with the Russians to explore it. "We'll be keeping you apprised of the inside news," he promises. "This could affect your future as nothing else before."

How could an investment firm that supposedly depends on a factual and intelligent view of present and future realities be so taken in by this old chestnut? That's not clear, although Richard C. Hoagland's book The Monuments of Mars*—claiming that what reputable planetary scientists consider are interesting but natural geological features are in fact artifacts of a civilization—was being widely publicized at the time.*

In any event, one recipient of the newsletter, space scientist Conway W.

Snyder, was not amused. Snyder was a scientist at the Jet Propulsion Laboratory, where many of our major planetary missions are managed, from 1956 until he retired in 1984. He was a key figure in the Viking Mars orbiter/lander program throughout the 1970s, serving as the Orbiter Scientist for the primary mission and Project Scientist for the extended mission.

Here, published with his permission, is the letter he sent to Feinstein, slightly revised and edited:

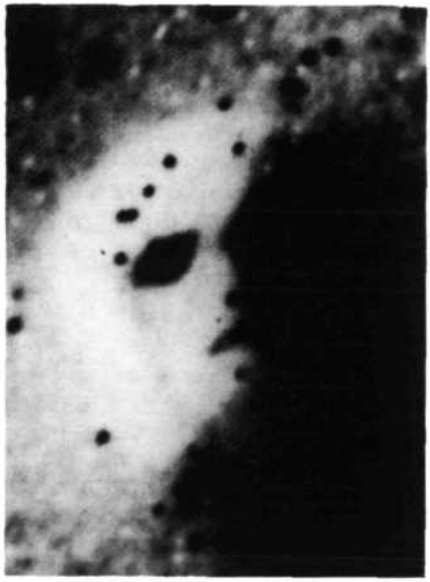
Dear Mr. Feinstein:

I was amazed and appalled to read your Winter Quarterly Report. Its "Important Announcement" on the back page contains more falsehoods and half-truths than I have seen packed into a single page in many years. I am in a position to know, as I spent 12 years as the Project Scientist on the Viking mission to Mars that took the picture you have been deceived by.

1. "Back in the early 1970's, the Viking space mission took over 60,000 pictures of the planet Mars." False. The Viking spacecraft did not arrive at Mars until July 1976, and all its pictures were taken thereafter.

2. "Recently, during a more careful examination of them, there was one picture that sent shock waves through the scientific community." False. The picture in question was taken early in the mission, and there has been no recent reexamination of it because no one with any expert knowledge about Mars paid any special attention to it. It did not send shock waves through the scientific community. I am personally acquainted with nearly all the scientists who have been studying the planet in recent years, and not one of them considered the picture to be anything worth commenting on.

What happened was that two men who happened to work at the Goddard Space Flight Center in Greenbelt, Maryland, who had no expertise in Martian geology or in photo-interpretation, saw the picture in 1977 and decided to see if they could get some publicity out of it. The first thing they did was to write to me to ask what the Viking scientists thought about the picture and whether there were any other photographs of the same area. I replied, pointing out the fallacy of their hypothesis and urging them to forget the whole thing. They chose not to do so, and later the idea was picked up by the *National Inquirer*, which specializes in stories that are sensational and scientifically false. You should be ashamed to be associated with such company, as by publishing this nonsense you have forfeited any faith in your veracity and common sense on the part of all knowledgeable people.



Viking photo of Mars "face."

3. "It is a monument of a human face." False. It is simply suggestive of a face. Millions of people every day see the shapes of animals in the clouds, but there are no large animals up there. The object does not even look very much like a face, but the correlating sense of the human brain fills in the missing details

to make one think of a face.

4. "Exactly six miles from it are several five-sided buildings." False. The objects cover a large area, so they cannot possibly all be exactly six miles from anywhere. Furthermore, they are not buildings but natural wind-sculpted formations of a type that geologists who specialize in desert landscapes are quite familiar with.

5. "This is no joke." True. It is not a joke but a hoax, which scientists do not consider funny at all.

6. "Somewhere there is—there was—there could be—a level of technology capable of things never dreamed possible before." Half-truth. There is at present not a shred of scientifically credible evidence that there are or ever have been sentient beings anywhere in the universe except here. However, some reputable astronomers think that the existence of such intelligence is highly probable, while others are equally convinced that it is highly improbable. If such beings exist, their technology is almost certainly much more advanced than ours.

7. "This could be the greatest discovery of the century." Ambiguous sentence. The discovery of extraterrestrial life would be the greatest discovery of this or any century, but if "this" refers to the picture of the Martian "face," then it is of no consequence whatever.

8. "The Russians know about it." True. Anyone who has looked at a significant fraction of the Viking orbiter photographs has seen the "face" and has been amused or amazed by it, depending upon his or her scientific sophistication.

9. "They [the Russians] are working frantically to launch a space mission this July." False. The Russians have comprehensive plans for many missions to Mars, but there is nothing frantic about the program. It is well planned, well funded, and scientifically sensible. They have no plans to investigate this so-called face.

10. "Our space agency, NASA, has asked Congress for a special $200 million appropriation for the search for extraterrestrial life." Possibly true. NASA indeed has, and has had for some years, a long-range program to search for intelligent radio signals from stars. It is known as SETI (Search for Extraterrestrial Intelligence). What the current appropriation request is, I do not know. It may be as much as $200 million over several years (the program is considered that important), but that is certainly not the amount for any one year.

11. "The request is public, but the reason behind it is cloaked in mystery." False. The reason behind it is well known and has appeared in magazines and newspapers innumerable times. It is simply that there are so many billions upon billions of stars in the universe, many of which must have planets, that many scientists believe it to be statistically probable that some of the planets are inhabited. There is no mystery about anything that NASA does.

12. "There is feverish excitement." False.

13. "Each side is trying not to alert

the other." False. The space scientists and administrators in the Soviet Union and the United States are all well acquainted with the programs of each other's country.

14. "But much is being planned." True.

15. "This could affect your future as nothing else before." Utter nonsense!

You owe your readers a retraction and an apology, lest you suffer a serious loss of credibility.

Sincerely yours,

Conway W. Snyder
La Crescenta, Calif.

(Feinstein's reply to Snyder acknowledged that he had been misinformed about the date of the Viking mission but made no mention of the other points in Snyder's letter. Feinstein also distributed a second, equally unskeptical bulletin about the Mars "face" and promised more revelations. For further information on the "Mars face" claim see "The Great Stone Face and Other Nonmysteries," by Martin Gardner, SI, *Fall 1985; "Wishful Seeing," by Jon Muller* SI, *Spring 1987; and K. Frazier's "Faces, Flyers, and Frauds," Fall 1985, and "More Hype on the Mars 'Face,' " Winter 1985-86. We hope to have a review of Hoagland's book in our next issue.—ED.)*

Send It to Sagittarius

WHEN a Denver, Colorado, man protested to postal authorities about astrological horoscopes in the public-service messages at the Denver Main Post Office, he got action.

"Your letter to the Postmaster General in Washington, D.C., was referred to our office for review," Dave LaMont, consumer affairs representative for the U.S. Postal Service in Denver, replied to Denverite Elver A. Barker.

"The computerized bulletin board is leased to provide postal information for our customers during their wait for service, and the astrological horoscopes you referred to have been removed from the board."

Barker's comment: "Victory!"

—*K.F.*

Not Every Newspaper Has Its Own Editor-Astrologer

WHEN the *Washington Post* devoted a color cover and three inside pages of its January 1, 1988, tabloid-format "Weekend" section to "Modern Astrology: The '88 Forecast,"

readers might well have wondered how the editors could let such nonsense go into their prestigious newspaper. This mystery, at least, was quickly solved. The author of this multi-thousand-word feature of astrological predictive pap ("We will see a rise in the incidence of AIDS") was Carl Kramer. And who is Mr. Kramer? "Carl Kramer," read the piece's author note, "is an editor in the Post's Weekend section and a longtime amateur astrologer."

—*K.F.*

EDITOR'S COLUMN

Moving Continents, Shifting Ideas

THE ARTICLE "Wegener and Pseudoscience: Some Misconceptions" by Nils Edelman in this issue discusses early attitudes within science toward the hypothesis of the German scientist Alfred Wegener (1880-1930) that the continents of today once had been parts of a giant land mass that split apart and drifted to their present positions. One can hardly conceive of a more incredible contention, but we now know it to be true.

Edelman shows why cranks are incorrect when they try to use the Wegener case against the scientific establishment in discussions about pseudoscience. He also explains why Wegener's hypothesis was a scientific theory and therefore not a borderline case between science and pseudoscience. I want to add some observations about this extraordinary episode in science.

Francis Bacon was among those who had commented upon the striking congruity of the coastlines of Africa and South America, and Benjamin Franklin once suggested a remarkably modern view of a crust in motion upon a more dense fluid interior. By Wegener's time there was considerable evidence in favor of continental separation and movement—for example, identical geological units and fossils on the west coast of Africa and the east coast of South America—but continental drift did not receive widespread support, at least outside Europe and South Africa, until abundant and overwhelmingly persuasive evidence was amassed in the middle to late 1960s. The delay in acceptance of continental drift was at least partly due to the fact that the mechanism Wegener proposed for the continental movements—a sort of plowing through the crust beneath them—was untenable and, in retrospect, wrong. And there was undoubtedly an entrenched geological conservatism. But more to the point, this was, after all, an extraordinary scientific claim, and it required extraordinary evidence before meriting general acceptance. That level of evidence didn't exist until the 1960s.

In the 1960s diverse lines of new geophysical observations and measurements not possible until then brought forth abundant evidence of sea-floor spreading. This led to a modernized, expanded, and generalized unifying theory—the new global tectonics, or plate tectonics. Among the observations essential to prove the case without a doubt was the discovery of symmetrical parallel patterns of geomagnetic variations in the sediments flanking the Mid-Atlantic Ridge, a clear indication that the age of the sea floor increases the farther it is from either side of

the rift. This was followed by early results from the Deep Sea Drilling Project, which showed conclusively that the sea floors were young features (no more than 200 million years old, or about 5 percent the age of the earth) and that they definitely increased in age on both sides of the mid-ocean ridges. In some way older ocean floor was moving away from the ridges. All this was combined with new worldwide seismic data showing distinct global patterns of earthquake zones defining the edges of huge plates of the earth's surface.

I came onto the scene—as a young science writer for *Science News* magazine, deeply interested in the earth sciences—in the late 1960s just as this revolution in thought and conception was occurring. It was exciting. Continental drift had certainly had tough sledding from 1920 until the 1960s, but then, relatively suddenly, everything changed. From this vantage point the dominant impression was not of a hidebound scientific establishment reluctantly yielding to new evidence but of flocks of bright, energetic young (and many older) scientists eagerly welcoming and developing this exciting new concept—now fully supported by powerful and mutually supporting geophysical evidence. Everyone wanted to participate in what was clearly a historic time and a wonderfully rich field of scientific inquiry. Plate tectonics had explanatory power. The theory explained in a satisfying way key dynamic processes of the earth—mountain building, the locations and depths of earthquake zones and volcanoes, similarities in the geology and fossils of now separated continents, paleoclimatological and paleomagnetic evidence that the continents had been at vastly different latitudes and longitudes in the past, and so on.

The Canadian geophysicist J. Tuzo Wilson made an apt comparison to the history of physics: The dramatic change in our view of the earth was comparable to the intellectual revolution in physics after the turn of the century, when the birth of quantum theory and relativity took physics out of its classical phase into its modern phase.

The new revolution in the earth sciences brought unaccustomed vigor and glamour to the field. Sessions on plate tectonics at meetings of the American Geophysical Union and the Geological Society of America in the late 1960s were filled to overflowing. People stood at the back or sat on the floor when necessary to hear the latest scientific reports. Scientists once highly skeptical of continental drift now warmly embraced the even more expansive ideas of plate tectonics. And all because of formidable and abundant new evidence amassed in support of the hypothesis and because of the explanatory power of this new evidence in the form of the theory of global tectonics.

In this view of the dynamic earth, the crust and upper mantle are divided into a few large crustal plates that move like a conveyor belt over the underlying, more plastic lower mantle at rates of 2 to 10

centimeters a year. A single plate may carry both continents and ocean floor. (The North American plate consists of the western half of the Atlantic sea floor and almost all of North America except for that sliver of Southern California west of the San Andreas fault system. The Pacific plate consists of that sliver and most of the Pacific Ocean basin.) These plates spread apart at the undersea mid-ocean ridges (e.g. the Mid-Atlantic Ridge and the East Pacific Rise) where new sea floor is being created. At their edges the plates may slide past one another, creating active earthquake zones, or crunch directly into one another, creating huge uplifted mountains. (The Himalayas are still being raised by the collision of the northward-moving plate carrying the Indian subcontinent against the Eurasian plate.) Or one plate may descend, or subduct, beneath another—as where the northwest-moving Pacific plate descends into the deep ocean trenches around the northern and western rim of the Pacific Ocean, creating the great chains of volcanic island arcs, such as the Aleutians and the Kurils. Or where the east-moving Nazca plate subducts beneath the western coast of South America to create the Andes. The earth's surface is continually being created and consumed.

It is an awesome (in the true sense of the word) concept, all the more so when you realize that it was soon confirmed and accepted by virtually all scientists. (Curiously, Soviet scientists were among the last holdouts, perhaps because of their emphasis on land-based continental geology; the persuasive new evidence had come from studies of the sea floor.) Several very recent polls show that even the general public widely accepts the idea of continental drift. This seems surprising when the same polls show far less public acceptance of the concept of biological evolution, which hasn't been controversial among scientists for most of a century. This discrepancy is apparently due to the emotional and

Science and Skepticism In Local Lecture Series

AT LEAST two local CSICOP-type groups have recently sponsored successful public lecture series in conjunction with educational institutions in their areas.

The Southern California Skeptics (SCS) cosponsored and produced "Controversies in Fringe Science and Medicine," a series of free monthly lectures held at the campus of Cal State University, Fullerton, in Fall 1987 and Spring 1988. The CSUF Physics Department and UC Programming were other cosponsors. Among the speakers and subjects were William Jarvis on medical quackery, Al Seckel on science and the paranormal, Joe Nickell on the Shroud of Turin, Ronald Siegel on near-death and out-of-body experiences, Joseph Barber on hypnosis, and L. Pearce Williams on the history of mesmerism and phrenology.

Seckel reports that SCS's grant proposal for this series has been accepted for next year as well. SCS plans to have similar programs at the Northridge and Long Beach campuses of Cal State. SCS has also long held a series of monthly lectures at Caltech. It also organized a two-day session at the meeting of the

religious connotations of biological evolution. Mind-boggling though it may be, the idea of continents in motion apparently threatens few personal beliefs.

Earth sciences textbooks were quickly rewritten in the early 1970s to encompass the new unifying concept of plate tectonics. Probably the best such text is *Earth* (W. H. Freeman and Co.), by Frank Press (now president of the National Academy of Sciences) and Raymond Siever. In its first edition (1974) the authors posed the question others have pondered: Why did this concept, which unifies so much geological thought, arrive so late in the history of the subject?

Press and Siever answer—quite correctly, I think—this way: "There are different styles among scientists. Some scientists—those with particularly inquiring, uninhibited, and synthesizing minds—perceive great truths in advance of others. Although their perceptions may frequently turn out to be false, these failures usually go unrecorded. Most scientists, however, proceed more cautiously and wait out the slow process of gathering supporting evidence. The concepts of continental drift and sea-floor spreading were slow to be accepted simply because the audacious ideas came so far ahead of the firm evidence. The oceans had to be explored, a new worldwide network of seismographs had to be installed and used, the magnetic stratigraphy had to be painstakingly worked out, and the deep sea had to be drilled before the majority could be convinced. In a well-known European laboratory, a list is being assembled (in good humor) to record the names of earth scientists in the order of the date of their acceptance of sea-floor spreading as a confirmed phenomenon. It is interesting that the names of scientists of distinction appear at both the top and bottom of the list."

—*Kendrick Frazier,* Editor

Pacific Division of the American Association for the Advancement of Science at San Diego State University last June. It is now an affiliate of that Division.

The Rocky Mountain Skeptics helped arrange an unusual science course, "Science and Skepticism," at the University of Colorado-Denver's Division of Continuing Education, consisting of five two-hour lecture-and-discussion periods during March and April 1988. Lecturers and sessions were: Edward W. Karnes on parapsychology and the elimination of bias and fraud in scientific experimentation; George Lawrence on crystals and the basics of quantum physics; Pat Wilkinson on science vs. pseudoscience vs. nonsense; William V. Mayer on the evolution/creation controversy; and Roger Culver on paranormal astronomical phenomena (UFOs, ETs, astrology, etc.). The group's promotional piece touted the series as "Escape to Reality!"

Local groups have also made some inroads in the media. Al Seckel of the Southern California Skeptics writes occasional, lengthy "Skeptical Eye" columns for the *Los Angeles Times* science section and is also writing a regular column in the *Santa Monica News.*

—*K.F.*

I Predict This Test Will Show Everyone's Psychic

WOMAN'S DAY magazine recently included a "How Psychic Are You?" test in an article on psychic powers ("Psychic Powers: Fact? Fantasy? Fraud?" November 24, 1987). Such self-administered tests seem to be a staple of popular articles on the subject.

This one, however, seemed more than usually suspect to Barry Karr, a member of the CSICOP staff in Buffalo and chairman of the Western New York Skeptics. "While withholding comment on the merit of the questions themselves," Karr writes in the group's newsletter, "I wish to draw your attention to the scoring procedures." (See the questionnaire, reproduced above.) Karr points out that it says if you scored below 15 points your psychic abilities "probably are minimal"; anything above 15 could mean you have "at least one type of psychic ability," as the test puts it.

"But note," Karr writes, "the test consists of 15 questions, and even a negative answer receives 2 points; thus 30 is the lowest score possible. This not only assures everyone that they have some psychic ability, but a person need answer 'yes' to as few as two questions—not very difficult considering the questions—to have at least two kinds of psychic ability."

How did Karr do? "I scored 60 on this test, with ten positive and five negative answers. According to the score analysis, I am extremely psychic, with abilities in all four main categories. So, what I want to know is—would any of you like to invest in my upcoming trip to Atlantic City?"

PSYCHIC POWERS

Compiled from tests devised by the North Texas Parapsychological Association and the Parapsychology Department of John F. Kennedy University, this easy quiz is not designed to measure your psychic abilities in any scientific manner. But it can give you an indication of psychic tendencies you may possess.

HOW PSYCHIC ARE YOU?

1. Have you ever had a dream that later came true exactly as you dreamed it?
___ yes
___ no
2. Have you ever felt that something was going to happen, only to have it happen within a few days?
___ yes
___ no
3. Have you ever had a physical premonition—rapid heartbeat, sweaty palms, butterflies in your stomach, for example—that caused you to change your plans and later you found out that by doing so, you had avoided disaster?
___ yes
___ no
4. Have you ever dreamed about an unfamiliar place or face and seen that place or face within a few days?
___ yes
___ no
5. Have you ever walked into a house or a room where you've never been before and had a strong feeling you *had* been there before or knew exactly where everything was?
___ yes
___ no
6. Have you ever found something you had lost by receiving a mental picture of exactly where it was?
___ yes
___ no
7. Have you ever thought you heard the voice of someone who was not there and later learned that the person died at approximately the same time you heard the voice?
___ yes
___ no
8. Do you often act because of intuition or a hunch?
___ yes
___ no
9. While away from someone you love, have you ever sensed that your loved one was in danger and found out later that you were right?
___ yes
___ no
10. Have you ever successfully willed someone to turn around and look at you?
___ yes
___ no
11. Have you ever suddenly thought of someone you had not seen in a long time, only to have that person show up within a few days?
___ yes
___ no
12. Have you ever known who was on the phone before answering it?
___ yes
___ no
13. Have you ever hoped, willed or prayed for the recovery of a lost object—say, a ring, watch or wallet—to be returned, and found it shortly thereafter in a place you knew you'd looked before?
___ yes
___ no
14. Have you ever had a winning streak or an unusual run of luck at a game of chance?
___ yes
___ no
15. Have you ever seen objects move when there was no apparent physical cause?
___ yes
___ no

SCORING:
Give yourself 5 points for every "yes" answer; 2 points for every "no."

Questions 1–4 describe examples of precognition—the ability to foretell the future.

Questions 5–8 indicate clairvoyance—literally, clear sight. This is the ability to know what is happening outside the range of your normal sight or hearing. (Question 8 also could indicate telepathic abilities. Many researchers believe that what we call intuition or hunches are the gateway between your physical and psychic senses.)

Questions 9–12 describe telepathy, the ability to send or receive thoughts without speaking.

Questions 13–15 deal with telekinesis, the movement of objects with no apparent physical cause.

If you scored between 60 and 75, you may be extremely psychic, with abilities in all four main categories: precognition, clairvoyance, telepathy and telekinesis.

If you scored between 35 and 60, you may have psychic abilities of at least two kinds.

If you scored between 15 and 35, you may have at least one type of psychic ability.

If you scored below 15, your psychic abilities probably are minimal.

. . . And I Predict This Test Brings More Abduction Reports

SPEAKING of magazine questionnaires, *Omni* recently had a doozie. Titled "Hidden Memories: Are You an Abductee?" it accompanied an otherwise fairly reasonable article on the alien-abduction fad (at least the article, in the December 1987 *Omni,* devoted several pages to skeptical, psychological commentary on the phenomenon). But the questionnaire seemed designed to encourage fantasy-prone people out there to interpret any psychological experiences involving alien visitation as real. It encouraged not the slightest skeptical attitude and gave no hint that normal psychological processes can produce such "experiences."

The questionnaire provoked your editor to submit a letter to *Omni,* which it published in shortened form in the March 1988 issue. The magazine did include the central point: "How sad . . . that the article's positive value is essentially trashed by the unfortunate questionnaire . . . which lacks even the slightest shred of objectivity and serves to encourage readers to fantasize, imagine, and concoct such pseudo-events or pseudomemories as real. The way the questions have been worded, it can't help but slant readers toward answers obviously Budd Hopkins and perhaps some of the staff at *Omni* desire." (The questionnaire asked readers if they would like to be contacted by Hopkins.) In fact, the questionnaire was useless as an opinion survey and disastrous as an effort to help people understand the difference between imagined happenings and real events.

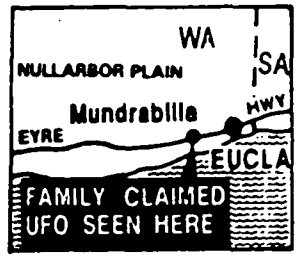
Australian magician/investigator Ben Harris prepared a detailed line-by-line critique of the questionnaire. For details, write to Harris, GPO Box 860, Brisbane 4001, Australia. A letter he submitted about it was published in the Australian edition of *Omni.* Says Harris: "The questionnaire in *Omni* is very leading. If the regressional hypnosis applied by proponent and popularizer Budd Hopkins and the like run anything along these lines, then they are deliberately feeding the myth. In fact, they are *creating* it by subtle, psychological methods."

—*Kendrick Frazier*

The Nullarbor UFO Incident: Dramatic Case Quickly Fades

THE THIRD week of January 1988 will go down in the annals of UFOlogy as a landmark period for UFO proponents in Australia. During this week, a UFO apparently assaulted a family car along an outback stretch of road in Western Australia. It wasn't just an ordinary sighting, however. According to the Knowles family, their car was actually buzzed and then picked up by the offending eggcup-shaped object. The case was closely followed on a day-to-day basis in most Australian newspapers; and although it was reported with great excitement internationally, the media were *for the most part* reasonably level-headed about it.

There are two basic accounts of what happened to the Knowles family early on the morning of January 20 as they drove down the Eyre highway along the vast desert of the Nullarbor Plain. (The time has been variously placed anywhere between 2:45 and 5:00 A.M.) The two reports are contradictory and are presented briefly below.



Site of the incident.

Account No. 1:

> Mrs. Fay Knowles and her three sons, Patrick, 24, Sean, 21, and Wayne, 18, who were traveling to Melbourne from Perth, said they had to swerve to miss a huge glowing object on the road. "It was glowing so bright," Sean said. "We swerved to miss it and nearly hit a car and caravan coming the other way. . . . It was a weird-looking thing and we stopped to go back and have a look at it." Sean said the family had become frightened and had to run back to their car to get away from the object. "At one stage when we were trying to get away we were doing up to 200 km an hour," Sean said. The object had landed on the car's roof and lifted the car from the road. His mother had gone into shock after she had felt the top of the car and touched the object. "She told me it felt like a rubber suction pad."
>
> The family told police that while they were suspended in the air their voices were distorted and they appeared to be talking in slow motion. After being suspended for a short time, the car had been dropped to the ground with such force that it caused one of the tires to blow out. The family had run and hidden in the bush. After about 30 minutes they had returned to the car, replaced the tire, and driven to the Mundrabilla roadhouse. They are expected to drive to Adelaide today to have their car tested by the Para Hills-based UFO Research Center.

Account No. 2:

> Faye Knowles and her three sons sighted a glowing object and watched it as it chased a truck and a car before it turned and landed on their car. The UFO picked up the car and then forced it back on the road, causing one of the tires to blow out. Mrs. Knowles said that the UFO turned the car around and placed it back on the road.

Here are some objections to the differing accounts:

1. In the first account we are told that the family saw the object in the middle of the road and that they had to swerve to miss it. During this evasive action, they almost collided with an oncoming car/caravan. *Where are the drivers of these oncoming vehicles?* Surely they too would have seen the glowing eggcup-shaped UFO.

2. In the second account, they first spot the UFO buzzing another car and truck. It then attacks them. This does not tally with the first account.

3. In the first account the family went *back* to have a look at the object. As we are told that they later had to go back to the car to escape, we can conclude that they disembarked for their investigation. Later, after being chased by the UFO, and after the blowout of the tire, the family once again fled their car. So in account No. 1 they leave the car twice, and in account No. 2 they disembark only once.

4. In further accounts Mrs. Knowles said, "We got out of the car and we hid behind a little tree in the bushes and it couldn't find us. It was still there waiting for us, looking for us." This refers to the second time the family fled the car after the UFO had landed on the roof. Question: If it indeed was a spacecraft that had traveled for possibly hundreds or thousands of years to traverse space, why did the allegedly advanced creatures have such a hard time locating four panicking humans hiding behind a "little tree"? This totally contradicts the entire premise of an advanced visitation.

How did the Knowles family know that the UFO was on top of their car, and how did they know that it lifted the car from the road? UFO-investigator Keith Basterfield, who interviewed the Knowles family, found their answers to be most interesting. They only *assumed* that the car had been lifted. According to Basterfield, the family did not *see* the car (via an external reference point) lifting from the ground. Also, the only evidence they had that the UFO had landed on

Australians Report Two UFO Incidents

Family of Four Says Object Chased Car

THE ASSOCIATED PRESS

SYDNEY, Australia — Police said Thursday they received two reports of unidentified flying objects, one of which looked like a huge egg cup, and that they were treating the matter seriously.

Four members of a family said the object shaped like an egg cup pursued their car along a remote stretch of outback highway Wednesday morning, plucked it from the ground and covered it in ash, police reported.

Faye Knowles told police her speech and that of her sons changed during the encounter on the highway.

Crewmen of a tuna boat 50 miles away said a UFO buzzed their vessel a few minutes later and their voices become unintelligible.

"We were a little bit skeptical at first, but after investigating we are treating the reports very seriously," said Jim Furnell, a police sergeant in South Australia state.

He said forensic scientists would examine the black powdery ash found inside and outside Mrs. Knowles' car. She told police she was driving with her family on the Nullabor Plain from Perth in Western Australia when the first saw a glowing object in her rear window at 2:45 a.m. Wednesday.

"It apparently picked the car up off the road, shook it quite violently and forced the car back with such pressure that one of the tires was blown," Furnell said. "While this was happening the family said their voices were distorted and it was as if they were talking in slow motion."

He said the crewmen of the tuna boat could not have known about Mrs. Knowles' experience when they reported a UFO sighting in the Great Australia Bight.

Keith Basterfield of UFO Research Inc., an international organization that records such sightings, said "it will certainly be the most physical of encounters ever recorded in Australia" if the reports are confirmed.

A spokesman at the Royal Australian Air Force base in Edinburgh, South Australia, said he was not aware of any military aircraft in the area at the time.

ASSOCIATED PRESS

Sean Knowles, left, and his brother, Wayne, were riding with their mother and backed up her report on UFO.

AP report of incident published in the U.S.

the roof was a "thumping sound." Could this have been the luggage (two bags) bumping up and down?

It now appears that there was no luggage rack atop the car. Such luggage racks can have rubber suction pads, reminiscent of the "suction pad" Mrs. Knowles said she felt on the roof of the car. The Knowles family claims that the luggage was roped on. However, when questioned by Basterfield about how the luggage was secured by the rope and about the current whereabouts of the luggage, the Knowleses failed to reply.

Apart from the varying accounts of the actual sighting, there were certain physical aspects that remained static throughout all the press accounts: (1) The rear right tire was blown out. This apparently occurred (we are told) as the UFO deposited the car back on the road after landing on its roof and lifting the Ford Telstar from the road. (2) A blackish "ashlike" substance was found on the trunk of the car. (3) The Knowles family claims that there was "smoke" or "fog" and that there was a foul smell like that of "dead bodies."

Tests have shown that the damage to the rear tire is *exactly* what one would see if the tire had blown out because of high speed and extreme braking.

Much importance was attributed to the ashlike substance that "covered" the car. It was implied that this may have been left by the attacking UFO. In fact, there was very little of this powder. Only two "sticky-tape" samples could be lifted from the car for testing. The car was not "covered" with it as had been suggested.

The substance was analyzed by the Australian Mineral Development Labs (AMDEL) in Adelaide. The ash was found to consist basically of carbonous material and iron oxide (rust). This is totally consistent with the tire blowing out at high speed. The rust could have been sheared off the brake-pad assembly during the extreme braking.

The burning tire and brake pads would have undoubtedly caused quite a bit of smoke and a strong smell. Another possible source of the smell could have been the dogs that were in the car with the four passengers.

It was claimed that other people witnessed the light (implied to be the same offending UFO) on the same night. These accounts were used in an attempt to substantiate the Knowles family's story.

However, they do not stand up to scrutiny. One account was of a "greenish-bluish object, rectangular in shape." A truckdriver who was on the scene when the Knowles family first revealed their story said that he saw a light in his rear-view mirror. This is hardly enough evidence to conclude that all of these reports were of a single event.

A peripheral sighting that does have merit is the claim by tuna fishermen in the Great Australian Bight. They said hey saw a bright object pass overhead. This lends credence to the implication that the Knowles family may have seen a falling meteorite. This theory, proposed by university physicist Glen Moore, could provide the solution to the entire incident.

The press has claimed that the fishermen experienced the same "slowing down of their voices" that the Knowles family had reported. It appears that "feedback" may be responsible for this. In other words, the fishermen heard that the Knowleses had experienced voice distortion, and they retrospectively surmised that their voices had also slowed down.

The fishermen's report came in *after* that of the Knowles family, although exact details were not available. The day *after* the Knowles story broke, the events were reported as having happened simultaneously. However, there *was* time for feedback. Undoubtedly the fishermen saw something, and it may have been the same thing that the Knowles family saw; but the fishermen lodged their report *after* the Knowles story had received intense radio coverage. Since the fishermen were only 50 km out to sea, it is not unlikely that they would have heard the early reports of the Knowles case, which emphasized the voice distortion, the ash, and the blown tire. Basterfield requested interviews with the fishermen, but it appeared that they would be at sea for up to three months.

Convincing prosaic explanations can be found to explain the details of the Knowles case: the smell, the ash, the ruptured tire. But what was the catalyst? What caused the event to blossom?

The Knowleses were on a long trip in a crammed car. They had been driving throughout the night. There is no doubt that imagination can play tricks on tired, weary travelers. It is possible, for instance, that an atmospheric inversion caused the distant lights of Adelaide to reflect in the sky. (This form of inverted mirage is well documented.) It is also possible that atmospheric conditions played tricks with the rising sun or some other celestial body. Under these circumstances, as has been clearly shown in the past, the natural celestial body could have given the appearance of following the vehicle, just as the moon appears to follow you as you drive along a highway.

Considering the second sighting, by the fishermen, it seems quite likely that the Knowles family may have seen a very bright meteor. Such an event is not at all uncommon, though a direct, nearby sighting is quite rare. To all accounts, it would be an awesome sight. And in the early hours of the morning, through tired eyes, it would be quite a scare.

Why does the damage to the car appear to match that which one would expect if the luggage were ripped free during a high-speed spin following a blowout? The Knowles family did *appear* to have a genuine scare. However, the evidence available does not indicate that a spaceship from a distant world had anything to do with it.

Surprisingly, by mid-February the case already appeared to have run its course. No more stories appeared in the mainline press, the pulp journals, or on television or radio. It appeared that the journalists were aware of the inconsistencies in the "story of the decade."

—Ben Harris

Ben Harris is a magician and investigator in Brisbane, Australia. He is the author of Gellerism Revealed.

Remembering Richard Feynman

THE ENTIRE intellectual world suffered a tremendous loss with the recent death of physicist Richard Feynman. I have been thinking about the legacy of Feynman with pleasure and gratitude. He was a tremendous influence on me and countless others who were lucky enough to share with him his wisdom and unique outlook on the world. I think if he were present today he would try to do away with the nonsense of being mourned, but we must mourn him.

Few men of our time have managed to lead a life so deeply filled. And few, it seems now, are less susceptible to neat memorialization. How is one to summarize a mind whose most persistent habit was distaste for summary, a resistance to all final conclusions?

Feynman's contributions to twentieth-century physics are legendary. Although there are many people who have never heard of him and probably could not care less about the finer results of science, there are others who share a deep passion for understanding the workings of our universe. Feynman contributed greatly to that understanding and for that we shall be eternally grateful.

What I cherish most about Feynman is the deep love he had for his subject matter and his remarkable ability to transmit that love to his students. He could take the seemingly most mundane in science and look at it or describe it from a new point of view (a view that was never obvious) and make it come alive and be interesting.

Feynman once related a story about one of his friends who charged that Feynman missed the beauty of a flower by studying it. Feynman responded: "The beauty that is there for you is also available for me, too. But I see a deeper beauty that isn't so readily available to others. I can see the complicated interactions of the flower. The color of the flower is red. Does the fact that the plant has color mean that it evolved the color to attract insects? This adds a further question. Can insects see color? Do they have an aesthetic sense? And so on. I don't see how studying a flower ever detracts from its beauty. It only adds!"

Richard Feynman died, so to speak, unfinished—still changing, still wondering, still unsolemn and incautious, still skeptical, still asking, not the last question, but the one after that. Richard Feynman, we will miss you.

—*Al Seckel*

Al Seckel is executive director of the Southern California Skeptics and editor of Bertrand Russell On God and Religion *(Prometheus). Reprinted, with permission, from the* Santa Monica News.

The Bortz Case: The Medium Is the Diagnostician

RECENTLY Ian Bortz, accused before a Montreal court of having illegally practiced medicine, raised the defense that it was not he who was consulted, but rather "speakers" from another planet who used him as a channel. This "the devil made me do it" defense did not work, notwithstanding a long line of witnesses who testified to the expertise of the accused—or rather to that of his speakers.

His technique was simple. His assistant counted backward from 100, which put Bortz in a trance. Thenceforth his voice changed (a fact upon which the defense put considerable reliance), and what issued from his lips included detailed medical diagnoses.

Curiously, they were only diagnoses,

not cures. The speakers routinely referred the patients to specialists for treatment, and in particular to chiropractors. One may be forgiven for wondering about the uneven distribution of intelligence on the speakers' planet.

A number of witnesses came forward to testify to the brilliance of these diagnoses. Two of them were, not surprisingly, chiropractors.

The court, without dismissing altogether the theories of the accused, held that even if Bortz was simply an instrument for the speakers he must have been aware that during his trance he would be asked for diagnoses. Accordingly, the court found Mr. Bortz liable.

The decision has been appealed.

—Robert S. Carswell

Robert Carswell is a solicitor with the firm of Byers Casgrain, Montreal.

CSICOP Elects New Fellows

THE COMMITTEE for the Scientific Investigation of Claims of the Paranormal has elected the following persons as Fellows of the Committee:

Susan Blackmore, psychologist, Brain Perception Laboratory, University of Bristol, England

Milton Rosenberg, psychologist, University of Chicago

Eugenie Scott, physical anthropologist; executive director, National Center for Science Education, Inc., Berkeley, Calif.

H. Narasimhaiah, physicist; president, Bangalore Science Forum, India •

CSICOP Adds Scientific Consultants

CSICOP has named the following persons as Scientific or Technical Consultants of the Committee:

Felix Ares De Blas, professor of computer science, University of Basque, San Sebastian, Spain

Martin Bridgstock, lecturer, School of Science, Griffith Observatory, Brisbane, Australia

Jeff Mayhew, computer consultant, Aloha, Oregon

Chris Scott, statistician, London, England

Sarah G. Thomason, professor of linguistics, University of Pittsburgh; editor of *Language* •

MARTIN GARDNER

Notes of a Fringe-Watcher

Occam's Razor and the Nutshell Earth

> I could be bounded in a nutshell and count myself a king of infinite space.
>
> Shakespeare, *Hamlet* II:2

THERE IS an old joke about a drunk who, late one night, found himself leaning against a circular pillar. He walked around it several times, patting it, then sank to the ground. "S'no use," he groaned. "I'm all walled in."

Incredible as it may seem, there was once a flourishing religious cult in Florida called Koreshanity, whose guru taught that the earth is hollow and we live on the inside. Almost as hard to believe is that this crazy theory still has defenders. But before explaining how the theory raises deep questions concerning the role of simplicity in science, and drawing a parallel with parapsychology, a few words about the Florida colony.

The founder, Cyrus Reed Teed, began his career as a Baptist fundamentalist and an eclectic doctor. (Eclecticism was a fringe medical school of the late nineteenth century that stressed herbal remedies.) In 1869 Teed experienced what he called his Great Illumination. An angel revealed to him that the earth is a hollow shell and that we live on its inner surface. The sun, moon, and stars are all tiny objects moving about inside the sphere, obeying complicated laws that Teed struggled to explain in his 1870 book *The Cellular Cosmogony, or the Earth a Concave Sphere.*

Courtesy Donald E. Simanek

Cyrus Reed Teed, "Koresh"

Calling himself "Koresh" (the Hebrew word for Cyrus), Teed was convinced that God had called him to be the founder of a new faith, that the scientific establishment was persecuting him just as they had persecuted Galileo, and that anyone who doubted the earth's concavity was in the grip of the Antichrist. In the late 1890s he began moving his colony of believers from Chicago to a spot south of Fort Myers, on Florida's Estero River, where he established the town of Estero. The cult's magazine, the *Flaming Sword,* did not expire until 1949, after an astonishing life of some 60 years. According to an article in *Southern Living* (May 1984), eight of the cult's thirty buildings still stand and others are being restored. You can take a guided tour through them at the Koreshan State Historic Site, off

Drawing of Teed's concave-earth cosmogony. (Courtesy Donald E. Simanek.)

U.S. 41, in Estero.

Old pseudosciences seldom die completely. In Hitler's Germany an aviator named Peter Bender became the leader of the *Hohlwelttheorie* (hollow-earth doctrine), which championed an inside-out cosmos. After his death the cult continued under the leadership of Karl Neupert, whose *Geokosmos* (Zurich and Leipzig, 1942) was the most widely read of his books. Other German books defending *Hohlwelttheorie* were published, and similar monographs popped up in Argentina.

About ten years ago, a firm in Nevada City, California, was selling a 1972 English translation of a 1949 German book by Fritz Braun titled *Space and the Universe According to the Holy Scriptures.* The book went through several revisions in Germany, where the English translation was also published. I was unable to obtain any information about the Nevada City group. Braun's most unusual additions to the inside-out model are his putting God's throne in the center of the shrunken universe, within a metal sphere, and locating hell in the boundless region outside the earth. This conforms (Braun argues) to the Bible's picture of heaven as up, hell as down.

The inside-out model recently found its most sophisticated defender in Mostafa A. Abdelkader, of Alexandria, Egypt. Two of his papers were abstracted in the *Notices of the American Mathematical Society* (October 1981 and February 1982), and his article "A Geocosmos: Mapping Outer Space Into a Hollow Earth" was published in *Speculations in Science and Technology* (vol. 6, 1983, pp. 81-89), an Australian journal devoted to unorthodox science. The noted philosopher Paul Feyerabend is on its editorial board.

Although Abdelkader acknowledges his indebtedness to Braun, he gives to the concave-earth model a mathematical precision lacking in all earlier accounts. Imagine the earth's surface to be a perfect sphere. Using simple equations, Abdelkader performs on space what geometers call an "inversion" with respect to the sphere. All points outside the sphere are exchanged with all points inside. The sphere's center maps to infinity, and infinity maps to the center. Inversion theory is often used by geometers for proving difficult theorems, and it has been extremely useful in physics.

After inverting the cosmos, Abdelkader then applies the same inversion to all the laws of physics. The result is a consistent physics that cannot be falsified by any conceivable observation or experiment! Of course the equations for the laws become horribly complex. Light rays follow circular arcs, the velocity of light goes to zero as it approaches the center of inversion, and all sorts of other bizarre modifications of laws are required. To an observer in this inverted universe everything looks and measures exactly the same as in the Copernican model, even though the heavenly bodies become minuscule. Day and night, eclipses, and the

orbits of the sun, moon, and planets—everything—can be explained by suitably inverted laws. Instead of the earth rotating, the shrunken celestial bodies revolve the opposite way around the earth's "axis." Because light follows curved paths, the sun seems to set as usual below the "horizon" as it travels a conical helix, six months in one direction and six months in the other. The Foucault pendulum, Coriolis effects, and other inertial "proofs" of the earth's rotation are all accounted for by the drastically modified laws.

Could you confirm the theory by taking off in a spaceship to see if you would quickly reach the other side by following a diameter of the sphere? No, because the closer you got to the center of inversion the smaller your ship would become and the slower it would move. You would soon find yourself traveling through what would appear to be vast galaxies. If the universe before inversion was open and infinite, you would never reach the center. It would be a singularity at which your size and speed would be zero, and time would stop completely. Of course you could avoid the singularity and get to the other side, but the trip would take as long as traveling to the outer edge of an expanding Copernican universe and back again. The fastest way to get to the other side would be to fly around the inner surface of the hollow earth.

Abdelkader says his main reason for believing in his inverted model is the relief it brings from the anxiety of thinking the universe is so immense that the earth fades into insignificance. Braun earlier expressed the same emotion by writing that once you accept his model "the fearful distances of billions of light years, the infinite emptiness and senselessness" of the Copernican model disappears. A Freudian would say that the inside-out universe expresses an unconscious urge to return to the warmth and security of the womb.

Karl Neupert, another promoter of hollow-earth doctrine.

Nowhere does Abdelkader invoke the Koran or his religious faith, though I suspect that Muslim fundamentalism lurks in the background in the same way that Christian fundamentalism underlies flat-earth theories and the cosmological models of Teed and the German concave-earthers. Teed liked to quote Isaiah 40:12, "[God] hath measured the waters in the hollow of his hand." Abdelkader also thinks that cosmic rays are best explained by his cosmology and that a definitive test of his model could be made by drilling a hole straight down through the earth. If his model is correct, would it not penetrate the earth's shell and open a hole to outer space?

It would not. A true inversion of infinite space would produce an infinitely thick shell of solid rock all the way to eternity. As the drill went "down," it would get larger and longer, and move more rapidly, until it passed through the "point at infinity," which corresponds to the earth's center before inversion. After that, the drill would start boring into the earth on the opposite side. The drill would emerge from the earth at a point antipodal to where it began drilling.

The matter is controversial, but most

mathematicians believe that an inside-out universe, with properly adjusted physical laws, is empirically irrefutable. Why, then, does science reject it? The answer is that the price one has to pay in complicating physical laws is too high. A similar situation arises in relativity theory. There is nothing "wrong" in supposing the earth fixed, as Ptolemy believed it was, with the cosmos whirling around it. The question of which frame of reference is "right," a fixed earth or a fixed universe, is as meaningless as asking whether you stand on the earth or the earth stands on your feet. Only relative motions are "real," but the complexity of description required when the earth is taken as the preferred fixed frame is too great a price to pay.

The opposite is the case with respect to choosing between Euclidian space and the non-Euclidian spacetime of general relativity. It is possible to preserve Euclidian space and modify the laws of relativity accordingly—indeed, just such a proposal was advanced by Alfred North Whitehead—but here simplicity is on the side of non-Euclidian space. In the spacetime of relativity, light continues to move in straight lines, rigid objects do not alter their shapes, and gravity becomes identical with inertia. It is only when we talk in a Euclidian language that gravity bends light, objects contract at fast relative speeds, and gravity and inertia appear as distinct forces.

Conventionalism is the term used for points of view that emphasize the extent to which mathematicians and scientists adopt basic axioms not because they are "true" but because they are the most convenient. Rudolf Carnap called it the "principle of tolerance," which he once expressed by saying, "Logic has no morals." One is free to adopt any set of axioms provided the system that follows is consistent and useful. One primary criterion of usefulness is simplicity. The inside-out model of the universe is rejected not because it is "untrue" but because an application of Occam's Razor—the law of parsimony—makes the Copernican model enormously simpler.

Abdelkader's geocosmos poses an extreme example of a choice between two conventions, one simple and the other insanely complicated. But on all levels of science Occam's Razor is a powerful tool. I will cite only one instance from thousands in the literature of psychic research. When parapsychologist Charles Honorton saw his friend Felicia Parise seemingly use psychokinesis to move a plastic pill bottle across a kitchen counter, the film of this great event showed her hands creeping slowly forward on each side of the bottle. The simplest explanation is that an "invisible" thread, stretched horizontally above the table from one hand to the other, propelled the bottle. The bottle even moved in little jumps, just as it would if friction resisted the pressure of an extremely fine, slightly elastic nylon thread. This conjecture gains support from the facts that Honorton did not know that invisible thread could be used in this manner to move light objects away from a person, that he did not examine Felicia's hands before the experiment, and that Felicia has never repeated the miracle.

Why do some parapsychologists, after simple tricks like this have been explained to them by magicians, refuse to thank the explainers or to alter their beliefs about the genuineness of the phenomena? Occam's Razor suggests the following hypothesis: They lack the courage to admit that, like the drunk, they had patted a pillar instead of a surrounding wall. •

Martin Gardner's latest book is The New Age: Notes of a Fringe-Watcher, *just released by Prometheus Books. It contains pieces published in his* SKEPTICAL INQUIRER *columns and in the* New York Times, *the* New York Review of Books, Discover, *and other magazines, with added forewords and afterwords.*

ROBERT SHEAFFER

Psychic Vibrations

WITH THE presidential campaign now upon us, it is reassuring to note that psychic predictions of the election results are already off to a good start. In a beginning-of-the-year "predictions" session on KPIX-TV in San Francisco, two psychics and an astrologer—Sylvia Brown, Patricia Russell, and Jay Jacobs, respectively—were each asked who would win the election. They managed to name not just three but *four* different winners: Dole, Bush, Gephardt, and Gore. (Jacobs, the astrologer, diversified his prediction by naming two candidates. This would enable him to claim prescience should either be successful.) This divergence of precognition visibly unsettled the hosts and the audience, who in the past have been only too eager to believe when just one prognosticator was on the set. One of these predictions may very well turn out to have been correct and enable one of the three to claim a "hit." We'll have to wait a few months to find out which one it is.

* * * * *

In the summer of 1987, various and sundry creationist organizations once again set out to organize teams to go to Turkey to search for Noah's ark, which is believed to have been lying somewhere on the slopes of Mt. Ararat since it ran aground a few thousand years ago when the Deluge receded. The Institute for Creation Research (ICR), the High Flight Foundation, a Dutch group, and many other creationist organizations went to Ararat (or tried to), with some groups cooperating nicely and others not. Former astronaut James Irwin, who walked on the moon in 1971 on the Apollo 15 mission, made his seventh attempt in as many years to find the ancient relic. Problems in obtaining the necessary permits limited the search, and a major snowstorm restricted operations. Potentially more unsettling, stereoscopic aerial photos of two sides of the mountain, while of excellent quality, revealed nothing. Once again, as in previous years, the ark evaded all attempts to find it.

In spite of years of disappointing failure, and some premature announcements of success, the creationists are far from abandoning the search. "Two new eyewitnesses were located—local residents who separately claim to have seen the Ark within the last few years," wrote John Morris of the ICR. "The evidence continues to mount that the Lord has

protected the Ark over the years. . . . In spite of the volcanic eruptions, the earthquakes, the erosion of the glacier, and the effects of time, the data strongly assert that the remains of the Ark lie somewhere on Mt. Ararat, buried by volcanic debris and ice, awaiting the proper time. . . . Even though the disappointment of this last summer is still fresh, I am convinced the discovery is near."

* * * * *

James Berkland has made quite a name for himself around San Jose, California. It seems that every time the earth jiggles in that vicinity, which is not exactly a rare occurrence, a story about Berkland appears in a local newspaper or on a radio or TV show claiming he had predicted the earthquake by counting the number of ads for missing dogs and cats. Berkland, who is employed by Santa Clara County as a geologist, actually has two novel ways of predicting earthquakes. One theory is that they are most likely to occur around San Jose during what Berkland calls "seismic windows": the eight days following either a full or a new moon. (Given that 29 days elapse between new moons, this 16-day "window" is open more than it is closed!) The other is that, because animals allegedly have the ability to foresee earthquakes, they are far more likely to run away in the days preceding an earthquake than at any other time. Therefore, says Berkland, we can expect an earthquake whenever we see an unusually large number of ads for missing dogs and cats.

Setting aside for the moment the question of why the moon's tidal forces should vent their destructiveness solely on the Santa Clara Valley and not, say, on Lisbon or Tokyo, the only problem with these two colorful theories is that they are unsubstantiated by facts. However, since many reporters are unwilling to let mere facts get in the way of an interesting story, with each earthquake local residents are regaled with stories of runaway pets almost as soon as the ground stops shaking. Largely forgotten is a 1981 article by two geologists that appeared in *California Geology*, a publication of the state's Division of Mines and Geology. The authors made a statistical evaluation of Berkland's "seismic window" theory, finding no tendency for earthquakes to occur locally while the "window" was open. In fact, they found that earthquakes occurred slightly more often when the window was *closed,* although they acknowledge a 95-percent chance that the difference is purely random. "The results from this study conclusively indicate that the seismic window theory fails as a reliable method of earthquake prediction," concluded the authors.

Another geologist has just published an article in *California Geology* comparing the number of lost-pet ads appearing in the *San Jose Mercury News* with the occurrence of earthquakes. He found absolutely no statistical correlation between the two.

Berkland calls these two studies "hatchet jobs," complaining that scientists are prejudiced against his ideas. However, he admitted to a *Mercury News* reporter that he has never done any statistical analysis of his own on the relation between lost-pet ads and earthquakes, adding that he hasn't taken statistics since his junior college days in 1949. "I'm not a statistician. I have been gathering data and hoping that someone would have this statistical bent," he said. •

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The New Age: A Scientific Evaluation

FRIDAY, NOVEMBER 4 — International Ballroom

8:00- 9:00 A.M.: Registration

9:00- 9:30 A.M.: **Welcoming Remarks**

9:00-12 NOON: **The New Age: An Overview**

Moderator: Paul Kurtz, CSICOP Chairman, Professor of Philosophy, SUNY, Buffalo

Maureen O'Hara, Professor of Women's Studies, San Diego State Univ.

J. Gordon Melton, Director, Inst. for Study of Religion, U.C.-Santa Barbara

Jay Rosen, Assistant Professor of Journalism, NYU

Robert Basil, editor of *Not Necessarily the New Age*

12:00-2:00 P.M.: LUNCH BREAK

2:00-5:00 P.M.: Two concurrent sessions (choose one)

Session 1: **Channeling**

James Alcock, Professor of Psychology, York Univ., Toronto

Graham Reed, Professor of Psychology, Glendon College, Toronto

Sarah Thomason, Professor of Linguistics, Univ. of Pittsburgh

Session 2: **Crystal Healing**

George Lawrence, Senior Research Associate, Univ. of Colorado

New Age Experiences

Ted Schultz, journalist, editor of *Fringes of Reason*

The New Age and Business

Béla Scheiber, Chairman, Rocky Mountain Skeptics

The Shirley MacLaine Phenomenon

Henry Gordon, magician, author, broadcaster, Toronto

5:00- 8:00 P.M.: DINNER BREAK

8:00-10:30 P.M.: **Keynote Address** — Rosemont Ballroom

Douglas Hofstadter, Professor of Psychology, Univ. of Michigan

"Musings on the Elusive Nature of Common Sense and Evidence"

(continued on next page)

SATURDAY, NOVEMBER 5 — Rosemont and United Rooms

8:00- 9:00 A.M.: Registration

9:00-12 NOON: Three concurrent sessions (choose one)

Session 1: **Cryptozoology**

Moderator: Lee Nisbet, Associate Professor of Philosophy, Medaille College
J. Richard Greenwell, Secretary, Int'l Society for Cryptozoology
Frank Poirier, Professor of Anthropology, Ohio State University, Columbus
Roy P. Mackal, University of Chicago
Charles Cazeau, geologist, Tempe, Ariz.

Session 2: **Graphology**

Moderator: Barry Beyerstein, Professor of Psychology, Simon Fraser Univ., Burnaby, British Columbia, Canada
Rose Matousek, President, Amer. Assn. of Handwriting Analysts
Richard J. Klimoski, Professor of Psychology, Ohio State University
Edward Karnes, Professor of Psychology, Metropolitan State College, Denver, Colo.
Felix Klein, Vice President, Council of Graphological Societies

Session 3: **Use of Psychics in the Legal System**

Moderator: Mark Plummer, lawyer, CSICOP Executive Director
Robert Hicks, Analyst, Dept. of Criminal Justice Services, Commonwealth of Virginia
James E. Starrs, Professor of Law and Forensic Sciences, George Washington Univ., Washington, D.C.

12:00-2:00 P.M.: **Fund-Raising Luncheon** (optional)—International Ballroom

Presentation by James Randi
Speakers: Philip J. Klass and Mark Plummer

2:00-5:00 P.M.: Two concurrent sessions (choose one)

Session 1: **Media Responsibility and the Paranormal**

Moderator: Milton Rosenberg, Professor of Psychology, University of Chicago
John Baker, Editor-in-Chief, *Publishers Weekly*
George Gerbner, Professor of Communications, Annenberg School of Communications, Univ. of Penn.
Richard Lobo, Vice President, NBC, General Manager, WMAQ-TV, Chicago

Session 2: **UFO-Abductions** (2:00-3:30 P.M.)

Philip J. Klass, aerospace editor, Washington, D.C.
Robert A. Baker, Professor of Psychology, Univ. of Kentucky, Lexington

CSICOP Goes to China (3:30-5:00 P.M.)

Paul Kurtz, CSICOP Chairman
Kendrick Frazier, Editor, SKEPTICAL INQUIRER
Barry Karr, CSICOP Public Relations Director

6:00- 7:00 P.M.: RECEPTION (Cash Bar) Mexicana-Olympic-Swissair Rooms

7:00-10:30 P.M.: **Awards Banquet** (optional) — Rosemont Ballroom

Awards Presentation: Paul Kurtz, CSICOP Chairman

Entertainment: "Skeptical Magicians from Around the World"

Master of Ceremonies: "The Amazing" Randi (Canada)
B. Premanand (India)
Ben Harris, (Australia)
Henry Gordon (Canada)
Robert Steiner (USA)

SUNDAY, NOVEMBER 6 — The Forum Room

9:00-12 NOON: **Enhancing the Skeptics Message**

Ray Hyman, Professor of Psychology, University of Oregon
Jeff Mayhew, computer consultant, Aloha, Oregon
Paul MacCready, President, AeroVironment, Inc., Los Angeles, Calif.
Jerry Andrus, magician, Oregon

REGISTRATION: Please use the registration form below. Pre-registration is advised. The fee is $85.00 (meals and accommodations not included). Student fee is $45.00. The Keynote address is $7.00 for nonregistrants.

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☐ $85.00 registration for _____ persons, includes Keynote Address $ _____

☐ $29.50 Awards Banquet for _____ person(s) $ _____

☐ $17.50 Friday Luncheon for _____ person(s) $ _____

☐ $7.00 Keynote Address for _____ *(This fee is for nonregistrants only.)* $ _____

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☐ NO. I will not be able to attend the conference, but please accept my contribution (tax-deductible) of $ _____ to help cover the costs of this and future special events.

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For further information contact Mary Rose Hayes, 716-636-1822, CSICOP, P.O. Box 229, Buffalo, N.Y. 14215. Media representatives should contact Barry Karr, 716-636-1822.

Special Report

Testing Psi Claims in China: Visit by a CSICOP Delegation

Introduction

Paul Kurtz

Five members of the Executive Council of the Committee for the Scientific Investigation of Claims of the Paranormal and one member of the CSICOP staff spent two weeks in China (March 21 to April 3). We were invited by China's leading scientific newspaper to appraise the state of psychic research and the extent of paranormal belief in China and to offer critical scientific evaluations where feasible. Our hosts were Mr. Lin Zixin, editor-in-chief, and other members of the editorial staff of *Science and Technology Daily*. Our group visited Beijing, Xian, and Shanghai, where we lectured at large public meetings and seminars and conferred with scientists, scholars, and journalists, including influential scientific critics as well as defenders of paranormal claims. While we were there, we carried out a number of tests of various subjects and claimants.

We are grateful for the gracious hospitality of our hosts, the openness and candor with which the meetings were conducted, and the many fine banquets and tours that were arranged.

Belief in the paranormal in mainland China has been growing rapidly in recent years. Spiritualism and psychical research had been pursued in China, as in the West, in the 1910s and 1920s. There had even been a Chinese psychical research society in Shanghai. But from 1949, when Marxism was officially installed by Mao, through the cultural revolution of the 1970s, China was cut off from the outside world. During this period, the ideological competition between idealism (which spiritualism and psychic research were viewed to be) and Marxist materialism led to the suppression of paranormal beliefs. It has been only since 1979, when greater freedom was permitted, that parapsychological influences again began to be felt in China, though the forms these beliefs have taken are in many ways unique to Chinese culture. Interestingly, belief in the paranormal has had a field day since then, and there has been very little public criticism.

Paranormal beliefs have taken two main forms: First, many people claim

to have special "psychic" powers. Reports have filtered out to the West about so-called paranormal children who proponents claim are able to read Chinese characters written on bits of paper and placed in their ears, under their armpits, or even under their rumps—presumably a demonstration of ESP. These children are also said to be capable of psychokinesis (PK), in that they allegedly break matchsticks or repair broken ones by the power of their minds. Other "supermen," as they are called, are claimed to have a wide range of "psychic" abilities. They can supposedly extract vitamin C pills from a bottle while the sealed cap and bottle remain unbroken. Others are said to be able to open locks hidden in boxes, move objects, make clocks run faster or slower, and/or bend forks (à la Uri Geller). Many public demonstrations of these powers have been presented.

A book entitled *Wojiao,* or *Chinese Supermen,* edited by Zhu Yiyi and Zhu Kunlong, published in 1987, promotes paranormal powers and has sold 356,000 copies. Even one of China's most distinguished scientists and its leading rocket expert, Qian Xue Seng, formerly a professor at Caltech and chairman of the China Association of Science and Technology Societies, has been impressed by these demonstrations. And *Nature,* one of China's science journals, published in Shanghai, has carried articles supporting the reality of paranormal phenomena. The incompatibility of such claims with Marxist ideology has been circumvented by categorizing such research as "physiological." Extraordinary Functions of the Human Body (EFHB) societies have sprung up all over China, and they generally have supported psychic claims.

The second area of belief that has enjoyed considerable popularity of late and seems to be growing is the use of *Qigong* (pronounced "chi-gung") to treat certain illnesses. Qigong is a form of traditional Chinese medicine going back more than 2,500 years and is based on the theory of "meridians," undefined channels in the human body through which flows the fluid or gas known as *Qi.* There are two forms of Qigong: internal Qigong, in which a person practices deep breathing, concentration, and relaxation techniques; and external Qigong, in which the Qigong master is said to be able to affect and cure others. It is claimed that with external Qigong a kind of energy or radiation is emitted from the fingertips that can cure and/or prevent illnesses. Among the various maladies Qigong masters can allegedly heal are hypertension, neurasthenia, circulatory problems, glaucoma, asthma, peptic ulcers, tumors, and cancers. Qigong is practiced throughout China in many traditional hospitals and institutes of medicine. A marriage of psychic powers and Qigong occurs in such places, as masters use alleged psychics to diagnose illnesses by seeing into a person's body without the use of expensive X-ray machines. During the cultural revolution, the Gang of Four attacked Qigong, but a movement is now under way to restore respectability to this "treasure" of Chinese culture.

China is now making a massive effort to catch up with the rest of the world. Thus the key word is *modernization,* and high on the list of priorities is expansion in science and technology. Some of China's most distinguished scientists suffered repression during the cultural revolution, and many were

sent out into the countryside to work. Scientific research languished during that period.

Are parapsychological and paranormal studies part of the new frontiers of science as some proponents in China maintain? Have there been significant breakthroughs in this area, or is this research, conducted in the name of science, simply pseudoscience? We were asked repeatedly if it was true that the CIA and the KGB are studying psychic phenomena for use by the military. If so, some wonder, will China be left behind in the psychic arms race?

How does traditional Chinese medicine—which includes herbal remedies and acupuncture as well as Qigong—compare with Western medicine? Can the claims of Qigong be validated? Many scientists in China are skeptical about these practices and see the need for scientific evaluation and criticism, but many others resent any Western involvement at all in traditional Chinese culture.

In any case, a number of Chinese scientists deplore the growth of irrational belief and welcome critical scientific investigation and skepticism—not on ideological grounds, but purely in terms of the quality of the research and the evidence. The only book critical of paranormal claims that has been published in China in recent years is *Psi and Its Variant—Extraordinary Functions of the Human Body* (1982), by Yu Guangyuan, and it had a very small circulation. Recently, however, excerpts from books and articles by skeptics, principally from the SKEPTICAL INQUIRER, have been translated into Chinese, though they are read by a limited and mostly scientific audience.

Fortunately we were given the opportunity to conduct a number of preliminary tests of various subjects who claimed to have special powers. Other Western scientists and reporters have visited China in recent years and some have been impressed with the demonstrations of "psychic" abilities they observed. Ours is one of the very few efforts of scientific testing by Western scientists in collaboration with Chinese scientists.

The following report is an account of the highlights of these tests. It is not an official report of CSICOP, but only of the individuals who took part in the tests.

As we left for home, the Chinese scientists expressed gratitude for our visit. They are in the process of translating other articles and books by skeptics and said that they would continue to do so. They also indicated that they hoped to form a Chinese Society for the Scientific Investigation of the Paranormal. CSICOP looks forward to working with them.

Preliminary Testing

James Alcock, Kendrick Frazier, Barry Karr,
Philip J. Klass, Paul Kurtz, and James Randi

Beijing

While in the Chinese capital of Beijing, members of the CSICOP team lectured at the Institute of Scientific and Technical Information of China. We held several seminars and two public meetings. Paul Kurtz spoke on the history of paranormal and parapsychological research; Ken Frazier, on the recent National Research Council report on parapsychology; and James Alcock, on "The Psychology of Extraordinary Belief." James Randi demonstrated psychic surgery and "psychokinetic feats," and Phil Klass spoke on UFOs.

Informal polls taken by James Alcock of the public audiences of 300 to 350 indicated that approximately 50 percent of those present believed in psychic phenomena—about the same as in North America. The audiences showed little interest in UFOs. We asked how many believed that UFOs were extraterrestrial, and the response was fairly low.

James Alcock and Ken Frazier also spoke at an informal seminar at the Institute of Psychology of the Chinese Academy of Sciences, and Phil Klass lectured at the Beijing University of Aeronautics and Astronautics.

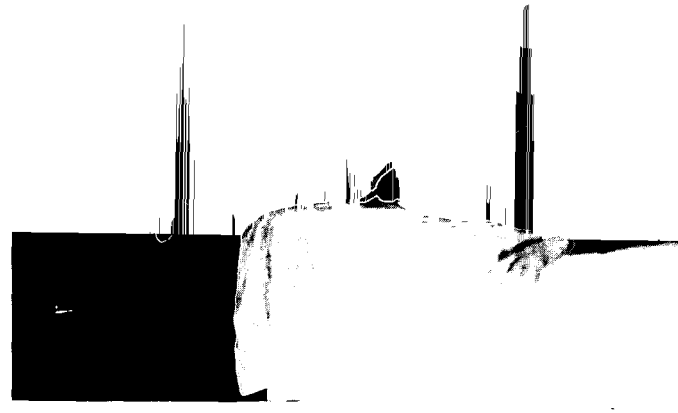
The CSICOP team was given two special demonstrations under the auspices of the Beijing College of Traditional Chinese Medicine. Approximately 75 people crowded into a classroom. We were given an informal demonstration of the powers of a young "psychic" woman. It was claimed that she was able to diagnose illnesses by seeing into a subject's body. She was asked to demonstrate her abilities with two members of our group. She announced that Phil Klass had an irregular heartbeat and that James Alcock had gallbladder trouble. According to Klass and Alcock, these diagnoses were incorrect. She was mildly embarrassed when Klass said that his health at age 68 was fine and that he frequently takes skiing vacations that would be impossible if he had such a heart problem. At one point, the psychic said she had been able to see into Jim Alcock's jacket and saw three pens in his pocket. When told he had only two pens, she shifted and said she must have been looking at Phil Klass. Klass *did* have three pens in his inside pocket. Since only minutes earlier she had asked Klass to move to a seat closer to her, she might have seen the pens inside his jacket as he did so. Next she asked Barry Karr, Paul Kurtz, and three others to stand on the stage in a relaxed position for ten minutes with their eyes half shut. As they did this, she stood in front of them and explained that she would direct her energies into them by a series of hand motions. She said this would make them "feel better." None of the subjects noticed a difference.

The most vivid demonstration was by a Qigong master, Dr. Lu. He placed one of his patients on the table in the front of the room. She lay on her stomach, facing away from Dr. Lu. He said that she had been suffering for 11 years from a lump on her lumbar vertebrae disk. He claimed that after he treated her the lump was reduced in size and her pain had lessened. Dr. Lu stood about eight feet behind the patient and began a rhythmic motion of his arms, which he continued for several minutes. The patient meanwhile began to move on the table. Sometimes her movements were slow and measured; at other times they were violent and convulsed. Dr. Lu maintained that Qi was emanating from his fingertips and that the patient's movements were in response to his efforts. He told us that he did not have to be in the same room with her for his power to work, that it would operate between walls and over some distance. He also informed us that 15 seconds was an adequate amount of time to transmit his Qi.

He agreed to let us conduct a test. Our design was simple: Lu would be in one room, the subject in another; the windows of the room would be shielded; and the Qigong master would begin his rhythmic motion upon our command. The test included ten 3-minute trials. For each trial, a coin was thrown into the air by a Chinese observer. Heads meant the master would attempt to transmit his Qi for the first 15 seconds of the trial; if it turned up tails, he would remain seated and not attempt to influence the subject.

James Randi, James Alcock, Barry Karr, and three Chinese witnesses were in the room with the Qigong master. In an adjacent room were Paul Kurtz, Ken Frazier, Phil Klass, and the subject, also accompanied by witnesses. Our watches were synchronized. During each three-minute interval we observed the subject's movements and kept meticulous notes. When the patient did move, we would ask her to stop after 15 seconds. After the test, we correlated the toss of the coin and the behavior of the patient. During one stretch of time, the coin came up tails four times in a row; this meant that the Qigong master did not transmit his Qi for 14 minutes and 45 seconds. However, the subject writhed during the entire session quite independent of what the Qigong master did. The only two trials during which the subject did not move were trials in which the coin had turned up heads and Dr. Lu was attempting to influence her. The results of these preliminary tests thus showed no significant correlation between the subject's movement and the Qigong master's efforts.

Although attempts have been made to detect infrared radiation emanating from the Qigong master's fingertips, no one had ever conducted the simple experiment that we devised to determine if there was a correlation between the movements of the Qigong master and those of the patient. How then can we account for the movement of the woman in the demonstration that took place when she and the Qigong master were in the same room? We reasoned that in the context of their roles of master and patient, both knew what was expected of them. They both believed in the power of Qi to make the woman move, hence she moved. It was clear to us that Dr. Lu's movements *followed* those of the patient when they were tested in the same room.



Dr. Lu, a Qigong master, using his alleged powers to control the movements of his patient.

At a special meeting with philosophers and scientists at the Institute of Scientific and Technical Information, Paul Kurtz, James Randi, and Barry Karr were able to view videotapes—not widely distributed in China or in the West—of 16 children being tested for paranormal abilities. Two of these tests were conducted at the Medical Institute of Sichuan Province on January 14, 1982, by Professor Xu Ming Ding. Chinese characters were randomly selected from a dictionary as targets. Each character was drawn on a piece of paper and then folded and put into an envelope (any tampering with the envelope could be easily detected) or put into a matchbox (with a thread inside that would break if the box was opened). In the first test, using envelopes, 16 children were tested. Eleven of the children were unable to provide the correct answer; their envelopes were found not to have been tampered with. Four children were able to identify the correct target; in each of those four cases, there was clear evidence that the envelopes and targets had been tampered with. One child was able to draw half of the target character. However, the piece of paper had been pulled partway out of the envelope, uncovering that same half of the target. This was also clear evidence of cheating.

In a second test, using the matchboxes, the four children who had scored correctly in the first test were reexamined, but this time under the direct scrutiny of two video cameras. Two of the children were able to make the correct guesses, but the threads on their matchboxes had been broken and on the videotape they could be clearly seen peeking inside the box. The other two children, under close scrutiny, did not cheat and got no positive results.

The Chinese investigators concluded that there was no evidence that the children tested had powers of clairvoyance, for in every case where the child guessed correctly (only half-correct in one case) the sample had been tampered with in such a way that the target characters could have been seen by the subject.

Summary

Test I:

11 children	negative results	targets not tampered with
4 children	positive results	unambiguous evidence of cheating
1 child	one-half positive result	unambiguous evidence of cheating

Test II:

2 children	negative results	targets not tampered with
2 children	positive results	unambiguous evidence of cheating

While in Beijing, the CSICOP team was approached by several psychics and Qigong masters, or their emissaries, who said that they would like to be tested by our group. We specified that the tests would be conducted under rigorous conditions. In three cases the subjects and masters failed to appear. For example, a representative of an Extraordinary Functions of the Human Body group in Beijing said she would bring two gifted children to be tested the next day, but they never came. Another time a Qigong master, who allegedly could pull pills from an unopened bottle, never materialized. The latter had been highly recommended to us as someone with genuine psychic ability.

Sometimes, though, the subjects did keep their appointments. One evening a medical doctor who was also a Qigong master came to our hotel room. He displayed a large news clipping from a German newspaper reporting an extensive interview with him. He also said that he had been tested by an Italian doctor. The main focus, however, was his younger sister. He claimed she was a psychic who could diagnose illnesses by looking into the subject's body. Again clairvoyance was being claimed, though Qigong was invoked as an explanation. He further stated that she could correctly diagnose the physical conditions of our relatives back in the United States and Canada if we just supplied their names and relationship. She stressed that she was not reading minds, but was actually able to "see" the person and what they were doing at that particular moment. A test was agreed upon. The names, relationship, and state of health of persons known to us were written down on separate pieces of paper, which were then folded and put on the floor in the center of the room. These names and illnesses could be confirmed, if necessary, by a telephone call.

The diagnoses then began. (1) James Randi wrote the name of his sister, who had been suffering from breast cancer but had been effectively treated for the condition. In our opinion, the woman appeared to be using a typical cold-reading technique. She said there was no major illness. She mentioned everything from anemia to insomnia, but not breast cancer. (2) The second subject was James Randi's mother. The psychic talked about liver trouble and arthritis in her legs. She said that she could at that moment see his mother talking to someone. The results were again negative. James Randi's mother has been dead for two years. It should be noted that at one point during the test the psychic was asked by an observer (who should not have asked) if Randi's mother were alive. The woman said "Yes." (3) The psychic was then asked by Randi to diagnose him on the spot. She said he had trouble with his neck, which was incorrect. She did not mention that Randi had suffered a lower back injury last year. (4) The last subject was Paul Kurtz's daughter, who has diabetes. The psychic said she was pregnant, which was not true.

At that point the test was concluded. We asked the Qigong master permission to publish the preliminary results of the test. He became very upset and insisted we not use his name or that of his sister. He explained that, because his sister's powers were so great they were supposed to be kept secret. Though not convinced of her powers, we agreed not to use their names.

Xian, Shaanxi Province

Xian has become a tourist mecca ever since the recent remarkable discovery of thousands of terra-cotta warriors and horses entombed more than 2,000 years ago by an emperor of the Qin Dynasty. In Xian, the CSICOP team again met with officials of the local Qigong institute. They too maintained that Qigong was able to cure people of a variety of illnesses. China, they said, had given the world five great discoveries: gunpowder, the compass, printing, paper, and Qigong. They referred to the theory of "meridians" to explain Qigong. Some people are especially meridian sensitive, they said. They also related Qigong to the four phases of the moon.

They presented us with two young women, both students at the police academy, who they said were able to see into a subject's body by psychic means to diagnose illnesses. James Randi proposed a test. The girls agreed to demonstrate their powers on the six members of our team and by telling us whether our tonsils and appendix were missing. All had had their tonsils removed except Randi, and none had his appendix removed. We wrote down our actual conditions in advance of the diagnoses. The girls thus had to make 12 decisions. In two instances they declined to make a choice. Of the remaining 10 cases, they called 5 right and 5 wrong. When we pointed out that their score was the same as could be expected by chance, they became upset. Earlier they had said that they were invariably correct.

By far the most interesting tests we conducted while in China were in association with Mr. Ding Wei Xin, secretary-general of the Xian Paranormal Function Application Association and editor of the magazine *Paranormal Function Probe.* Mr. Ding emphasized that his organization is unique in China, since it is concerned with the *practical* applications of the paranormal. A former journalist with an academic background, he said he was the first person to make public the tests of children with clairvoyant and PK powers, and claimed to have trained more than 100 people who possessed paranormal powers. The most practical use of these abilities, he said, was in diagnosing illnesses, which could save a considerable amount of money. He boasted that psychic diagnoses were far more accurate than X-rays and could "match CAT scans." The people who work with him, he said, had diagnosed several thousand patients by psychic means. He told us that psychics are also helpful in locating natural resources and in archaeology. Paranormal powers had been used, he said, in searching for criminals, and psychokinesis (PK) could help remove kidney stones and gallstones. Mr. Ding's claims were astonishing to us, but he proposed providing various subjects for testing.

Mr. Ding with two of the "psychic children"

Professor Fan Yu Lin, president of the group, said in a formal talk that he believed the paranormal phenomena produced by the children were genuine and he tried to explain this as a product of the evolutionary process.

We were in a crowded room with about 80 people. In the rear were several of the "psychic" children, all about 11 years old. Mr. Ding brought forth two young girls for us to test. He first claimed that they could read characters in sealed envelopes. James Randi produced a number of envelopes that had been prepared beforehand, each containing one randomly chosen Chinese character. The children were permitted to hold the envelope in only one hand and for some 20 minutes they were under constant scrutiny by those present. The results were negative and the children became very distressed. Mr. Ding was evidently surprised. The next test, he said, would be of PK. He brought up two other young girls and provided two matchboxes. Inside one box was placed a green match, which we insisted be marked on all sides with two red stripes. Mr. Ding said one of the girls would break the match using her psychic power. A second match, similarly identified, was broken into several pieces and inserted into the second box. He asserted it would be restored to its original condition by the other girl. Again our controls were stringent. The boxes were marked on the inside and outside with the initials J.R. They were then sealed with tape. The girls could only touch the box with one hand or lay it on the floor in front of them. They could not remove it from sight. In evident distress at these strict conditions, they were not able to perform, and these tests were also negative. Mr. Ding admitted that he had never before marked the matches.

Mr. Ding was himself dismayed at the negative results. He implied that they might be due to the fact that the children were nervous and under the scrutiny of too many people. He agreed that we should continue testing the next day in our hotel under quieter conditions. That evening Mr. Ding held a huge banquet at which we were able to meet and dine informally with six of his prime subjects, including two young boys. We had a wonderful time and ended the night by disco dancing with the youngsters. The atmosphere was friendly and the attitude was positive, something that Mr. Ding had insisted was necessary for proper testing the next day.

The following morning the testing resumed in the People's Hotel in Xian. Present were Mr. Ding, three young girls (and later two boys), four members of Mr. Ding's group, the CSICOP team, Mr. Lin (our host in China), a reporter for the *Science and Technology Daily*, and a translator. We designed the protocol for the first test for PK. There were three empty matchboxes.

"Psychic children" concentrating during test of their alleged powers.

An unbroken toothpick was placed into box "B1." The box was closed and sealed with white medical tape. Another toothpick was broken into three pieces and placed into box "B2," which was also closed and sealed with medical tape. An unbroken toothpick was placed into box "B3," and it too was sealed with medical tape.

We conducted the tests under the most stringent conditions: The toothpicks had all been indelibly marked for identification and the boxes were tightly wrapped with medical tape, numbered, and photographed. The children were not permitted to remove the boxes from our sight. They could hold a box with only one hand or put it on the floor in front of them. Most of the session was videotaped, as was the previous day's session, and we noted that Mr. Ding was gazing absently out of the window and took little interest in our procedures. Under such conditions, the girls were unable to produce positive results—when the boxes were opened, the toothpicks were in the same condition as before.

Mr. Ding again voiced surprise. The children were usually successful, he said. We then told him he could conduct the next experiment as he wished and we would simply observe his method of testing. So we began anew. This time there were four subjects—three girls and a boy. For this experiment Mr. Ding used cellophane tape and matches with *green* heads. He also wrapped the boxes in paper. The procedure was the same as before, though Mr. Ding told us he would tape the boxes even more tightly. The first box ("A") contained broken matchsticks; the second box ("B"), a whole match; the third box ("C"), broken matchsticks; and the fourth box ("D"), three matches. He said the children would restore the broken matches or, if whole, break them by the power of their minds. Mr. Ding kept no records of any kind; nor did he mark any of the matches.

Under Mr. Ding's supervision, bedlam broke out. After a few moments,

Examining the evidence. *Left* to *right:* James Randi; Wu Xiaoping and Ding Jian, from *Science and Technology Daily;* Mr. Ding, editor of *Paranormal Function Probe;* one of the test subjects; and Paul Kurtz.

the children darted from the room with the matchboxes in their posssession. They ran up and down the stairs, in and out of the elevator, inside and outside the building. Mr. Ding saw nothing wrong with this. He did not bother to count the remaining matches, nor did he take notes as we had done of all the previous tests. The children went in and out of the room several times. At about noon, after an hour and a half of running around, the children sat quietly in their chairs for 15 minutes in an attitude of concentration. They then said they were tired, and Mr. Ding was not confident that they had been successful. The children asked if they could leave the hotel grounds with the boxes. Mr. Ding said yes, and proposed that we meet again at eight o'clock that evening. We were shocked at this loose protocol; but it was Mr. Ding's test, so we agreed.

That evening they all returned. We were told that one of the boxes, box "D," had been accidentally destroyed; it was not returned. We then proceeded to examine the other three.

The outer wrapping paper and tape on boxes A and B did not appear to have been tampered with or unsealed. When we opened them, the matches were exactly as they had been before. They had not changed. Box "C" was a different matter. Although somewhat the worse for wear, the box at first appeared not to have been tampered with. *But on closer inspection it was clear that the tape had been unwrapped and removed;* vegetative matter (most likely grass) and a strand of hair were found *under* the cellophane tape. We opened the box. It had previously contained five broken pieces of a match with a green head. Now we found an entirely intact match, but it had a *red* head! Moreover, we discovered that the girl in the experiment had given the matchbox to the two boys who returned it, but who had not even been part of the experiment. Mr. Ding apparently saw nothing wrong with this.

We ruled that there was obvious evidence of tampering and that cheating

had taken place. Although Mr. Ding now admitted to us that some of his children had cheated in the past, he maintained that many such cases were genuine. Unwilling to admit that a child had cheated in this case, he argued that there may have been vegetative matter on the table when the matchbox was wrapped. This was simply not so. Moreover, he rationalized that the green matchstick had been miraculously changed to a red one. He reached into his brief case and produced a match, carefully wrapped in paper, which appeared to have both a red head and a green head. This, he said, had been produced by one of the young boys who had returned it; and he affirmed that this indicated an even more surprising power of psychokinesis! Later, when we confronted the two boys individually about what had happened, we got contradictory stories. One even blamed his father, who he said had told him if he could restore a broken green match he could just as easily change it into a red one!

What may we conclude from this fiasco? It was apparent that Mr. Ding was extremely naive and that he was unable to design a simple controlled experiment to detect fraud. Obviously the children were playing games and doing so with impunity. Yet Mr. Ding attributed their feats to a psychokinetic effect.

Shanghai

The last two days of our sojourn in China were spent in Shanghai, a city of faded elegance with very little new construction other than some tourist hotels. Here we met with the faculty and staff of the Shanghai College of Traditional Chinese Medicine. This group seemed most receptive to our suggestion that rigorous tests be made of Qigong. To our surprise, they were completely unaware of the importance of double-blind trials and expressed enthusiasm about doing such tests in the future. They focused primarily on internal Qigong, a form of relaxation that they claimed could reduce hypertension and have a beneficial effect on other illnesses. They were somewhat skeptical of external Qigong, where a master seeks to induce changes in a patient's health.

We also met at the Dong Hu Guest House with some skeptical scientists and philosophers who said that they had done tests with psychics and Qigong masters with invariably negative results. Unfortunately, they confided, the press was more interested in reporting the fantastic claims of paranormalists than in the more mundane, skeptical critiques. This, we noted, is similar to what occurs in other countries.

Conclusion

Our preliminary testing of various children, psychics, and Qigong masters produced negative results. The tests were recorded by still cameras, audiotape, and videotape. Further accounts of our inquiries will appear in future issues of the SKEPTICAL INQUIRER. •

The Appeal of the Occult: Some Thoughts on History, Religion, and Science

The current appeal of the occult arises from deep-rooted historical traditions, the narrowing domains of mainstream religions, and the shortcomings of science education.

Phillips Stevens, Jr.

POPULAR INTEREST in phenomena variously labeled as "occult" has been intensifying recently in Western society to a degree probably unparalleled since the sixteenth century. Great numbers of people today, at all levels of society, are both willing and apparently eager to accept, uncritically, occult explanations and to assign paranormal causes to poorly understood or imperfectly perceived phenomena.

Analyses in the social sciences tend to focus on correlations between social conditions and patterns of belief. Many conclude with reference to "the will to believe"; the notion that people need to believe in something, and that they can reestablish a lost sense of social community by sharing a particular belief (Catherine Albanese's [1981, pp. 163ff.] notion of "homesteads of the mind"). In this view, if the thing loses its appeal it must be replaced by something else, to alleviate cognitive dissonance or to satisfy human needs for social affect and for explanation of the natural world. Often, so this argument can run, a magical explanation is easier or more comfortable than the admission of no explanation or confronting the relatively complex and apparently discomfiting task of examining alternative explanations, as Singer and Benassi (1981) found in their widely cited classroom experiments.

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Most of these sociological analyses and explanations have some validity in their basic premises. Although few have been successfully subjected to rigorous examination, many surely contribute to understanding various manifestations of the current "occult explosion." In our search for explanations for the current appeal of the occult, however, we need to look deeper into three areas: the historical background, the structure of religion, and the role of science in human life.

The Occult in History

Most social analysts who investigate the general public's interest in the occult deal with the subject as if the trend represents something sudden or unique to the second half of the twentieth century. Albanese (1981) is one notable exception; another is Galbreath (1983). Paul Kurtz (1986) notes that what he calls the "transcendental temptation" is as old as humanity, but under this rubric he is referring to the development of mainstream religion as well as "fringe" beliefs and activities. The definition problem is important: We will seriously confuse our investigations if we do not make a distinction between mainstream religion, as adhered to by a majority of the population and sanctioned by mainstream institutions, and occult beliefs, as operating on the social fringe without mainstream sanction.

The specific forms current occult beliefs assume may be new, even unique, but in their general nature such trends have long and fairly continuous historical precedent. My perspective on occult beliefs is anthropological; and a great strength of anthropology is its view of culture as a dynamic system, its recognition of culture as process. This combination of systemic and historical perspective gives anthropology special insight among the social sciences. I think we will make better progress toward understanding the current interest in the occult if we place it in historical perspective and recognize what Albanese (1981, p. 164) refers to as "the occult tradition" in Western history. In a historical context, *occult* should mean not only "hidden," and hence mysterious (and magical), but also aberrant, somehow at odds with mainstream tenets. We should also recognize varying social factors in the definition and application of the term.

We tend to regard periods of history as self-defining, bounded units rather than as influenced by the legacy of their own past, and we view them through lenses of our own making. But in our view of history, the methods of anthropology must apply: We must be certain that our terms (e.g., *occult*) are applicable to other historical periods—which are, in fact, other cultures. Throughout the first thousand years of the Christian era, beliefs we would call "occult" were relatively unimportant on a broad social scale, in spite of our label "Dark Ages" to the latter half of this period. During the early centuries of the second millennium, such beliefs moved rapidly from the fringe to a central position in the mainstream. The seventeenth century saw the beginnings of modern science—but also the height of executions for witchcraft.

Seventeenth-century thinking was heir to at least 700 years of the centrality of concern with magic, witchcraft, demonology, and heretical religious movements. Will and Ariel Durant (1961, p. 575) wrote: "Religions are born and may die, but superstition is immortal. . . . Kepler believed in witchcraft, and Newton wrote less on science than on the Apocalypse." Chadwick Hansen (1969, p. 7), discussing the historical context of Salem witchcraft, noted:

> The difficulty is that we tend to remember these men only for the ideas we still value, forgetting the other contents of their minds.
>
> We forget that Bacon believed you could cure warts by rubbing them with a rind of bacon and hanging it out of a window that faced south, and that witchcraft may take place "by a tacit operation of malign spirits." We forget that Boyle believed in an astonishing and repulsive variety of medicaments, including stewed earthworms, a worsted stocking that has long been worn next to the flesh, and human urine. . . . It was Boyle who proposed that English miners be interviewed as to whether they "meet with any subterraneous demons; and if they do, in what shape and manner they appear; what they portend, and what they do." And Newton, the greatest scientist of his age, spent more of his time on the study of the occult than he did in the study of physics. He explicated, for example, apocalyptic passages in the Bible, and interpreted the measurements of Solomon's temple, hoping in both cases that a mystic reading of the scriptures would lead him to the inmost secrets of the universe. . . .

Hansen goes on, quoting from Locke's *Essay Concerning Human Understanding* (our capacity for reason does not equip us to "deny or doubt the existence of such spirits") and Hobbes's *Leviathan* (we may doubt the efficacy of their powers, but witches should be punished for their evil ambitions) to show that even principles and applications of logic may vary among historical periods. He summarizes his discussion of the seventeenth-century world-view: "Scientists, philosophers, lawyers, physicians, the learned community in general believed firmly in the existence of an invisible world, and in the capacity of the inhabitants of that world to intrude on this one" (Hansen 1969, p. 8). What was "occult" was the misguided—and potentially dangerous—efforts of people to contact and manipulate such entities or forces.

Historians tend to give the impression that, with the rapid decline of the "witchcraft craze" and the firm emplacement of the Industrial Revolution and the Age of Reason in the eighteenth and nineteenth centuries, occult beliefs in general retreated to an insignificant fringe. In fact, this was not so, as both Albanese (1981, pp. 163-187) and Galbreath (1983) point out. Instead, *different manifestations* of occult interest rose and faded. The eighteenth, nineteenth, and early twentieth centuries saw fairly continuous interest in occult dabblings, but largely of sorts that operated quietly, without the sensationalism of their forebears. They made appeal to intellect, reason, philosophical sophistication, and selected principles of science ("pseudoscience" has old roots!). Examples include European Swedenborgianism, mesmerism, secret societies, and phrenology in the late eighteenth and early nineteenth centuries; American spiritualism from 1848; Theosophy and "psychical re-

search" by the mid-1880s; Asian religions, magic, and various forms of divination by the turn of the century; and the various interests of this century, with which we are more familiar. Many of these, on examination, can be seen to be new forms of old cosmologies and traditions (e.g., Neoplatonism and various medieval dualisms); many have bases in the same premises of material/spiritual interaction addressed by inquisitions and witch hunts of earlier periods.

We should recognize that there is a fairly continuous "tradition" of adherence to phenomena variously labeled as "occult" through history. We should understand history, the historical legacy of any period we investigate, and the contemporary factors that shape our view of history. We should understand how the heresies and fantasies of one age, or one segment of a population, may be the dogma of another.

So there is nothing very significant *per se* in the fact of the current interest in the occult. There has always been an occult fringe, manifested in some ways or others, its adherents seeking satisfaction of whatever particular needs. What is significant is that today, in an era of unparalleled scientific discovery, occult interest seems to be moving from the fringe into the mainstream and seems now to be attracting, possibly, a majority of the people. A Gallup poll in June 1984 showed that 55 percent of teenagers aged 13 to 18 believe that astrology works, up from 40 per cent in 1978. In April 1985 (*New York Times,* April 18 and April 25, 1985) a beleaguered Procter & Gamble elected to remove its 100-year-old man-in-the-moon logo from its packaging, in reaction to thousands of phone calls and letters denouncing it as a satanic emblem; and today the public and the news media are alarmingly open to satanic interpretations of various disturbing or bizarre events. Shirley MacLaine's 1987 television movie *Out on a Limb* and her several books have received serious reviews, in which the words *dream* and *fantasy* are scarce. In February 1987, NBC-TV's "Today" show presented a special on "crystal consciousness"; and in March, a two-part series on "channeling" (which Kurtz [1987, p. 3] has identified as simply spiritualism with no frills). *Time*'s December 7, 1987, cover story on the New Age was written quite fairly; but the language in Time-Life Books' recent deluge of promotion for their new *Mysteries of the Unknown* series is unconscionably pro-paranormal.

Galbreath (1983) cautions against relying on superficial statistics, pointing out the difficulty of measuring the depth of respondents' *real commitment* to occult explanations. But clearly there is growing public confusion and an increased willingness at all levels of society to abandon or sidestep principles of reason and jump to extremely fuzzy supernatural or occult explanations. In the preface to his monumental work *Religion and the Decline of Magic* (1971), Keith Thomas states, "Astrology, witchcraft, magical healing, divination, ancient prophecies, ghosts and fairies, are now all rightly disdained by intelligent persons" (p. ix). The evidence today indicates that he is dead wrong. The recognition that such practices and beliefs have long historical precedent, however, is not sufficient to explain what we must now regard as a general crisis of reason.

A Dynamic Model of Religion

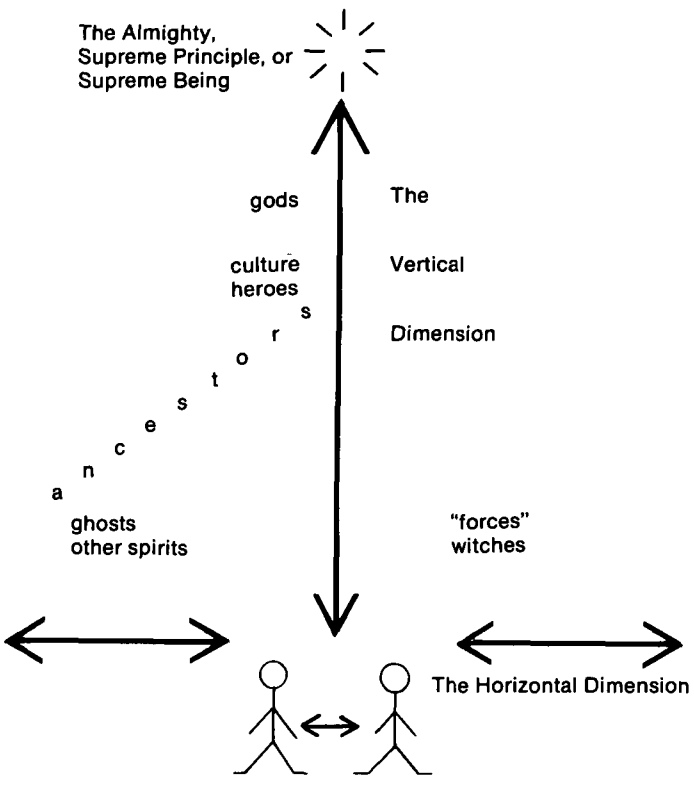
In my courses on the anthropology of religion, magic, and witchcraft, I have developed a model of religion. (See figure.) It is a heuristic device only, not meant to be self-explanatory. But with careful discussion it has proved to be quite effective. It is meant to be universally applicable—and to be both descriptive and dynamic. The model depicts religion as operating simultaneously along two spatial dimensions. The "vertical" dimension is the relationship between people and elevated divinities; the "horizontal," the recognition of supernatural agencies operating on the level of human society.

As a framework for description, the model can help to show how, for any religious system, various categories of divinities, powers, and forces are conceived; and the nature of their cosmological roles, their interrelationships, and their relationships with human society. The categories of the supernatural are intentionally broad, allowing for inclusion of many variant forms.

Not all religious systems will contain beings or concepts that fit in all categories. Some societies do not distinguish clearly between ghosts and ancestors; some conceive of several agencies in similar terms; some place differing degrees of importance on different ones. Sorcery, the malevolent human manipulation of natural "forces" through magical means, is universal, but a few societies have no beliefs in witches—people possessed of special powers enabling them to work evil directly, without magic. Relatively few religious systems postulate an active "underworld"; hence my vertical arrows do not extend *below* the level of human society. As a framework for description the model is of most utility to an anthropological analysis of religion in culture.

As a guide to historical process, the model can help us understand how religion responds to social trends, both ideological and technological. Specifically, it can help us to conceptualize responses of both popular cosmology and mainstream religion to the Enlightenment and the Industrial Revolution of the seventeenth and eighteenth centuries.

We are heir to a religious tradition that provided a system of *total cosmology*—explanations for the workings of the natural world and of people's place within it—for its adherents, acknowledging and accommodating both the vertical and the horizontal dimensions. Such a tradition continued, as we have seen, through the seventeenth century. Now, in terms of the model: as science and technology advanced, mainstream religion adapted by collapsing steadily inward toward an exclusively vertical focus, allowing less and less formal accommodation for beliefs in agencies along the horizontal dimension. The observance of religion itself has narrowed and become compartmentalized, conducted in specially designated places generally on only one day of the week and for a very short time on that day. Agencies along the horizontal dimension, which once were regarded as real and immediate, have become relegated by the mainstream to "superstition"—or "occult." The realm of "the occult" has thus broadened considerably since the seventeenth century, and organized religion today offers little counsel about it.



The presumption has been—and it continues, as an ideal—that science and technology would provide satisfactory explanations for those areas of cosmology previously explained by reference to agencies and forces along the horizontal dimension. Indeed, this presumption is the underlying premise of modern mainstream religious institutions and is tacitly fundamental to all others. The presumption—hence the premise—was, and is, of course, false. The implications of this falsity can be seriously disorienting to the tens of millions of people—not only recent immigrants from Third World cultures, although theirs is the clearest case—for whom spiritual agencies, magic, and witchcraft are real, as I have indicated elsewhere (Stevens 1982).

Science and the Public

There seems to be general agreement among scholars and educators today that general science education in the United States has failed miserably; that the failure was accelerated during the "do your own thing" ethos of the late sixties and early seventies; and that, as an academic premise at least, the increasing appeal of the occult directly correlates with the failure of science education. We should consider carefully some aspects of the conduct of

science and the public's attitude toward it.

An understanding of the nature and processes of science is not generally accessible to the public; it is itself esoteric knowledge. Jon D. Miller, in the Spring 1983 *Daedalus,* a special issue devoted to scientific literacy, defined "the attentive public" as "individuals interested in a particular policy area, and willing to become and remain knowledgeable about the issue" (Miller 1983, p. 44). According to a survey conducted by the National Science Foundation, the attentive public for science policy in 1979 constituted about 27 million adults, or about 18 percent of the adult population. Of this number, according to a test of the understanding of fundamental concepts and issues administered by the NSF, approximately 70 percent did not meet the minimal criteria for scientific literacy. Stated more directly, the findings showed that a bare 5.4 percent of adults in the United States qualified as scientifically literate.[1] A more recent poll of "technological literacy," also conducted by Miller and sponsored by the NSF, reported in *Science Indicators—1985* and summarized in this journal (Summer 1986, 296-297), showed large numbers of people expressing "little" understanding of certain basic technological concepts and strong reliance on luck, alternative medicine, UFOs, and some other occult-related indicators. This research has recently been published in full (Miller 1987). Miller and others conclude that this situation is not only nationally disgraceful but potentially dangerous.

Singer and Benassi (1981, p. 54) conclude their important study of occult beliefs by acknowledging the validity of various sociological and psychological explanations, but asserting that a large share of credit for the current popularity of the occult lies with science education. Their main conclusions are: (1) Science is taught as an academic or clinical exercise, to be applied strictly within the parameters of a particular classroom or laboratory project, its specific procedures to be memorized by rote as part of the particular package. Science is not taught as a general "cognitive tool," a way of reaching a deeper understanding of our environment. (2) "Many occult claims could be countered with even an elementary knowledge of scientific facts, but even an elementary knowledge may be largely lacking." (3) Scientists themselves, by overstressing the limitations of science and underplaying its achievements, have contributed to a widespread impression that science is largely subjective, vacillating, and able to assess only clinically measurable facts.

To these observations I will add some others:

- Science is characterized by exceedingly narrow specializations. Scientists come to know more and more about less and less.
- The avenues of communication within science, and between scientists and the public—except when scientists step outside their own areas of expertise, as we shall see below—are extremely restricted. Scientists tend to talk only to one another, generally within their own disciplines, and in esoteric language. Very little of what they communicate trickles down in terms comprehensible to the lay public. Gerald Holton, in a recent issue of *Daedalus* on Art and Science, notes: "The thought processes and operations of both [science and technology] have moved behind a dark curtain. There they have

"There has always been an occult fringe. . . . What is significant is that today, in an era of unparalleled scientific discovery, occult interest seems to be moving from the fringe into the mainstream. . . ."

taken on a new form of autonomy—isolated from the active participation or real intellectual contact of all but the highly trained. Contrary to eighteenth-century expectations, the scientists are losing what should be their most discerning audience, their wisest and most humane critics" (Holton 1986, p. 92).

- There is usually a substantial lag, often years, between the news of a scientific breakthrough and its application—if any—to people's lives.
- The two foregoing factors contribute to the public's sense of alienation from science, and mistrust of it. William J. Broad, in a recent *New York Times* review of Richard Rhodes's comprehensive *The Making of the Atomic Bomb* (a book I would recommend as part of a remedial package for "the attentive public for science policy") points out the next logical danger:

> All too often the moral drawn from the atomic saga and its legacy of arms development is, simply put, that science can lead to evil, and that since its temptations cannot be resisted, its powers should be sharply constricted. (Broad 1987, p. 39)

Or take fluoridation of public drinking water in the 1950s, or genetic engineering today.

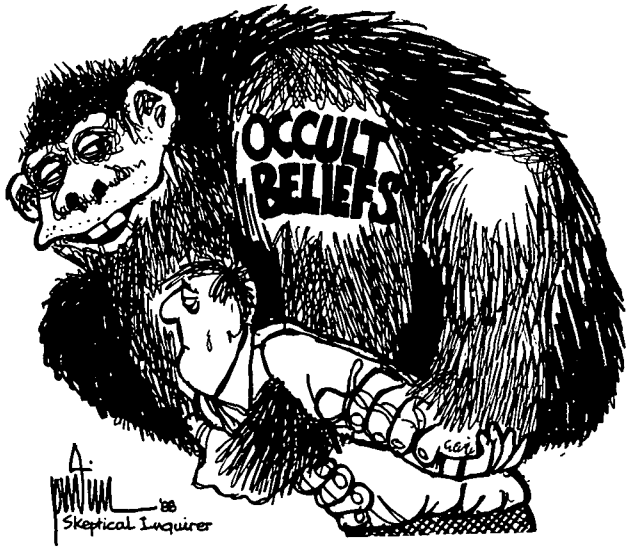
- Singer and Benassi have observed that science has become packaged as an academic or clinical exercise and that the process of empirical reasoning and the search for alternative explanations for apparently mysterious phenomena are not carried into the everyday world as tests of empirical reality. I would observe, further, that this is a problem not only at the student level; some established scientists violate their own principles when they step into other fields.
- The public has not the understanding to differentiate among "scientists," and an advanced degree or other distinction can become acceptable qualification for making pronouncements beyond one's area of expertise, e.g., Linus Pauling and vitamin C, astronaut James Irwin and the search for Noah's ark, and books on "creation science" written by holders of doctorates in civil engineering. Now distinguished popular publishers, most recently Time-Life Books, can be similarly faulted.

These are observations on the conduct of science, not criticisms deserving of remedies, although some of them should certainly be used as cautionary. A major scientific enterprise, such as the manned space-flight program or

AIDS research, is necessarily a highly complex system, its parts at once rigidly compartmentalized and vitally interdependent. Its broad pyramidal base is virtually hidden from view, even probably from the purview of those at the peak of the pyramid where the breakthrough takes place. And, of course, the peak is illusory; it is not really there, and the pyramidal structure of the whole enterprise cannot be defined until the breakthrough does occur. This is the nature of science, and general descriptions of it and observations about the resultant public attitude toward it ought themselves to be part of a general science curriculum.

But the basic principles of the scientific method, modified very little since Francis Bacon, are not at all abstruse. At the level of a specific scientific project, Holton is quite right in noting that "the connection between phenomena and theory, the theory itself, and the way it is constructed, confirmed, and elaborated are, and have to be, fully controlled by the scientific community." But his concluding phrase can be misleading: "and understanding them comes only with long immersion" (Holton 1986, p. 93). The educated public need not be immersed in a specific project in order to understand the basic structure of science itself. The fundamental principles of the scientific method are simple, straightforward, and easily taught. Science education must start, and continue for some time, at the very basics: the vocabulary of science ("evolution is just a theory" is demonstrative of ignorance of the meaning of "theory") and the principles of logic and reason. As a university instructor for 17 years, I agree with Jon Miller (1983, p. 46) that the place to start is elementary school.

Isn't it paradoxical that our age is witness at once to the most profound



scientific discoveries of all time *and* such a burgeoning of interest in the occult? Considered at one level, it would seem so. But when we look a bit deeper, at the general structure and content of knowledge, as we did for the seventeenth century, we can see that it is not. There is a grave crisis in science education. The basic principles of the scientific method are not being taught in a manner that can enable otherwise well-educated people to apply them to problems in their daily experiences. The public are the avid consumers of the products, but have little awareness of the processes, of science.

The expectation that science and technology would replace supernatural explanations on the horizontal dimension of people's relations with one another and with the natural world has not been fulfilled. But organized mainstream religion has come to focus almost exclusively on a vertical dimension, and "occult" beliefs are increasingly accepted by the science-deprived public.

Notes

Earlier versions of this paper were presented to a meeting of the Northeastern Anthropological Association at Lake Placid, New York, April 1985, and to a meeting of the Western New York Skeptics, Buffalo, New York, June 1986.

1. Kendrick Frazier, reporting on Miller's findings in the SKEPTICAL INQUIRER (Summer 1986, p. 296), is more generous, giving the figure as 7 percent. But according to Miller's figures, the "attentive public for science policy" constituted 18 percent of the adult population; 70 percent of them, or 12.6 percent of the population, did not meet the minimal criteria; 5.4 percent, therefore, did.

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This article continues discussions, begun in our Winter and Spring issues, of misunderstandings about, and misuses of, hypnosis regarding claims ranging from reincarnation to alien abductions.—EDITOR

Hypnosis and Reincarnation: A Critique and Case Study

So-called past-life regressions in hypnosis can seem like persuasive evidence for reincarnation until the most thorough archival search has been completed.

Jonathan Venn

"PAST-LIFE" hypnosis has been known in Europe since 1862 (Stevenson 1974) and became popular in the United States when *The Search for Bridey Murphy* (Bernstein 1956) sold a million copies. Today, past-life hypnosis is practiced in many cities of the United States and Europe and probably constitutes a major market in the commercial psychic field.

Conventional hypnotists like myself have a number of ethical and scientific concerns about past-life hypnosis. Most of its practitioners are laypersons with little training in hypnosis, psychology, or medicine, and criticism of their practice by professionals has been polemical (Fromm 1979). Moreover, in 1983 the Division of Psychological Hypnosis of the American Psychological Association published a cautionary word in a proposed statement of ethics (Brodsky 1983).

If past-life hypnosis is presented as fact when it is really based in fantasy, it may frighten people away from the more legitimate uses of hypnosis. I regularly encounter clients who might benefit from clinical hypnosis but who, having heard of bizarre pseudoscientific practices like past-life regression, are afraid to try it. It is their loss, and a preventable one.

Past-life hypnosis is a common practice, but we do not have a good

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understanding of what it is. Regressions can be induced in a great many people (Baker 1982; Kampman 1973), even in people who do not believe in them (Fiore 1978). This does not prove that "memories" of past lives are based on reality, but it does show that some people are readily disposed to have them. If past-life hypnosis can teach us something about personality, or if it is a powerful form of therapy, as its proponents claim, then it warrants study. We should not dismiss it the way mesmerism was dismissed in the eighteenth century. Nor should we take it at face value, until careful research establishes what it is. Professionals' opinions have been based on assumptions about hypnosis and reincarnation rather than on a solid body of research.

Professionals are skeptical about past-life regression because they know that people are capable of creating realistic, consistent, and vivid personalities that have no basis in fact—e.g., in dissociative disorders like fugue and multiple personality (Hilgard 1977; Venn 1984). Also, novelists, dramatists, and thespians have been entertaining us for thousands of years with their ability to create believable, fictional characters. People who are credulous about past-life regression show the same naiveté about hypnosis that has appeared in criminal cases like *State* v. *Mack* (1980), in which "hypnotically refreshed" testimony contained obvious absurdities and was thrown out of court. Controlled research indicates that people are likely to fabricate under hypnosis (Dywan and Bowers 1983), and they are likely to come out of hypnosis believing their fictions are real (Laurence and Perry 1983). A modern theory of hypnosis would explain past-life regression as the product of normal factors like suggestion, role-playing, loss of inhibition, a desire to please the hypnotist, and source amnesia.

In source amnesia, or *cryptomnesia,* a subject remembers information that was learned through normal means but does not remember how that information was acquired. Often the subject has an eerie feeling about it, because the information seems mysteriously isolated and inexplicable. People tend to offer paranormal explanations when source amnesia has occurred (given our need to try to explain things). For a history of some famous occurrences of source amnesia in parapsychology, see Stevenson (1983). Source amnesia is the most acceptable alternative to reincarnation as an explanation for most cases of past-life regression.

Adequate research methods for studying past-life hypnosis can be developed by analyzing the deficiencies of the pro-reincarnation literature, where most cases have been based on two or three items of information that make the case look convincing (Currie 1978; Grossi 1975; Holzer 1970; Steiger and Williams 1969; Wambach 1978). Absurdities, errors, and inconsistencies either did not appear or were not reported. I suspect that these would be found in many past-life cases if they were researched thoroughly enough (as in the "Sacramento Bee" case reported by Montgomery in 1968, in which a hypnotized woman named nonexistent citizens and businesses of nineteenth-century California).

Another problem with the popular literature is that most cases are based on only brief contact between hypnotist and subject. The Bridey Murphy

case, for example, was based on just six hypnotic sessions. Helen Wambach has conducted group workshops in which many subjects are hypnotized in the space of a day. Minimal contact inflates the subject's credibility. When more sessions are conducted, the subject has more opportunity to utter false, impossible, or inconsistent remarks. In the case of Matthew, which I will summarize below, I conducted 60 hypnotic sessions over an 18-month period, and the subject uttered a number of inconsistencies, such as claiming to have two adult "lifetimes" in the same year. (Impossible, unless you believe in bilocation.)

An adequate method for investigating past-life hypnosis would include a large number of sessions, and these sessions would be recorded. The case-study method would be employed, because intensive reports of individual cases are more illuminating than superficial studies of a thousand subjects. The "lifetime" in question would pertain to a time and a place for which historical records exist, and archives would be researched exhaustively. Finally, positive as well as negative data would be reported.

The case described below satisfies these criteria for a good research subject.

Matthew was a 26-year-old optometrist's assistant from Oklahoma. He began to experience "cardiac neurosis," or hypochondriacal chest pain, two weeks after the birth of his second child. Three times in a four-month period he came to the emergency room of our hospital believing he was dying of a heart attack. Each time the physical examination was negative. The emergency-room staff asked him to see a psychologist, and that is how I came to meet him.

Psychosomatic patients are notoriously resistant to psychological services, but Matthew was quite willing to discuss the emotional aspects of his problem. He was also willing to use hypnosis and proved to be an exceptionally good subject—one of the most hypnotizable people I have met. He became deeply absorbed in hypnosis in a matter of seconds, and he showed a wide range of hypnotic phenomena. He responded to suggestions for amnesia, analgesia, ideomotor movement, post-hypnotic suggestion, and age regression.

Outside of hypnosis, Matthew was rather stoic. In fact, he identified this as one of his problems. He could not cry, but he wished he could so that he would have the same emotional release as other people. His father used to beat him for crying and say, "If you keep crying I'll beat you again." Interestingly, Matthew cried during his age regressions to childhood. Then, when he came out of hypnosis, he did not remember that he had been crying.

Matthew was unusually adept at age regression. He became disoriented from the present time and place and really believed he was back in the past, reliving some event from his childhood. His voice rose in pitch to that of a child's, and he had the gestures, emotions, and vocabulary of a small child. After a few sessions, he became so fluent in age regressions that they began to occur spontaneously, without any prompting from me but entirely within the flow of his own associations. This indicated not only his hypnotic virtuosity but also the tremendous pressure that strong emotion was exerting

in his mental life. He was driving toward a deep emotional release or catharsis.

Finally he "regressed" to the personality of a French pilot, Jacques Gionne Trecaulte, allegedly machine-gunned through the chest by a German aviator near Mons in August 1914. Matthew showed the full depth of emotion that occurs in the most complete abreactions. He cried, yelled, sweated, and clutched at his chest for half an hour.

During our 18 months of working together, the Jacques Trecaulte personality appeared 20 times. At first Matthew was amnesic for these experiences, but as the weeks went by he became aware of Jacques and came to believe that he really had existed.

Matthew's chest pains disappeared. His relationships improved with his wife, his children, his coworkers, and his community. If I were a pro-reincarnation therapist, I might argue that his cardiac neurosis was related to his death in a previous lifetime and that his recovery was made possible by recalling the event in hypnosis. However, because my thinking is more in tune with contemporary psychology, I emphasize that Matthew, like many psychosomatic patients, was under a significant degree of stress but lacked the means to express his emotions adequately. He was aware of this problem and traced its origin to his father's strict discipline. Age regression in hypnosis permitted some aspiration of pent-up emotion, but a deeply therapeutic abreaction did not occur until he "regressed" to the alleged past life of Jacques Trecaulte. The further he got from reality, in other words, the more he was able to show emotion. Past-life regressions may be therapeutic not because they are real but precisely because they are not. They create distance from reality and allow the expression of otherwise taboo thoughts and emotions (Kampman and Hirvenoja 1976; Zolik 1962).

Luckily for my research, the Jacques Trecaulte personality pertained to a time and a place for which historical records are available. "Jacques" uttered 47 statements that could be checked. I investigated every source I could find: popular books, public libraries, the military archives in Paris, and the city archives of Thionville, which Jacques claimed as his home.

I divided these sources into local records (public libraries to which I had access and popular books) and foreign records (located in France). Thirty of Jacques's 47 statements could be checked against local records (including statements about French history and geography); the remaining 17 (which included the names of private citizens and references to the local geography of Thionville) could be checked only in France.

Dividing the records into local and foreign helped me to determine whether this case had a paranormal element. If Jacques Trecaulte really had existed, it should make no difference whether his statements were verified in local or foreign records; a reincarnated entity should know all this information equally. On the other hand, if Jacques was the product of source amnesia, he might know information that was available locally but be misinformed about information in foreign archives.

The results of this investigation were detailed in the *Journal of the*

American Society for Psychical Research (Venn 1986). I will summarize by saying that, of the 30 items that could be checked in local sources, 16 proved to be true and 14 were false. Jacques knew the names of French towns, weapons manufacturers, and the month and year of the Battle of Mons. On the other hand, some of the places he named did not exist, and his death could not have occurred in the way he described it: Machine guns were not installed in airplanes until October 1914 (Mason 1965).

Of the 17 statements that could be traced only in foreign archives, all proved to be false. There was no mention of Jacques Trecaulte in the three archives that should have contained his name if he had existed (the military archives of Paris, the Thionville city register, and the Thionville marriage record). There was no mention of his wife, his son, his father, his father-in-law, or some of the military men he named. The street he claimed to have lived on had not existed. I concluded that Matthew's "past life" had no basis in reality and no paranormal elements to it.

Caveat emptor! Past-life cases can be made to look rather convincing if only the positive findings are reported and the author fails to mention whether any negative findings or logical absurdities also occurred. I might have made Matthew look like a case for reincarnation if I had reported the data selectively. Matthew knew more French history and geography than we might expect from an American high school graduate, and he could not remember any normal means by which he might have acquired this information. He believed that Jacques was real, and that was his explanation for how he had acquired the information.

I believe that Matthew learned about France and World War I through normal means like books and television. Matthew watched a lot of television, and he was an avid reader of comic books, particularly of the fantasy/superhero variety. A lot of information can be absorbed in this way, but few people will recall every source.

The fantasies of hypnotized persons can be deceptively vivid, intense, thorough, and consistent. Professionally trained hypnotists are working to establish the scientific credibility of their art; and when hypnosis is used for pseudoscientific practices like past-life regressions, it is bad public relations. This is not to say that past-life hypnosis is not therapeutic. It may be powerfully so. But this may be due to the creative element it shares with psychodrama and not because of a basis in reality.

Past-life hypnosis has become a common practice in the United States and Western Europe, but adequate research is needed to establish what it really is. If it is presented as fact when it is really based in fantasy, it may do harm by misleading the gullible, confusing the mentally disordered, and giving hypnosis a bad reputation.

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Do My Eyes Deceive Me? Pitfalls of Perception

'I know what I saw!' is one of the most difficult claims to counter from an honest witness of a UFO, ghost, or 'paranormal' event. Yet our senses can lie, and eyewitness accounts are often poor evidence. To appreciate such misperceptions we need to understand the physiology of our senses.

Anthony G. Wheeler

OUT THERE is the real world—a solid, warm, moving, noisy, smelly world. But is what we perceive reality or just a synthesized, altered approximation of it? To better understand perceptual errors, and some paranormal phenomena, it helps to know something about the physiology of perception.

Our perceptions are based on sensory information—energy received, transformed, and transmitted by sensory cells (transducers). When this information is carried and processed by the networks of nerve cells appropriate to that sense, our consciousness is presented with a *simulation* of reality. It is this simulation that we *know*, and it is the reception, transduction, peripheral and central processing, and presentation that makes up perception. The closer the simulation approximates reality, the more truthful and honest the perception of our environment will be.

An example: Your sense of hearing filters out repetitive background noise so that, while you still hear noise, you are not continually conscious of it unless you choose to be so. At the same time, if you miss small sections of conversation they can be reconstructed from the meaning of the preceding and succeeding words and phrases so that you are aware of a complete, sensible message. These two processes are the means by which you can enjoy a single conversation in the midst of a noisy cocktail party (Broadbent 1962).

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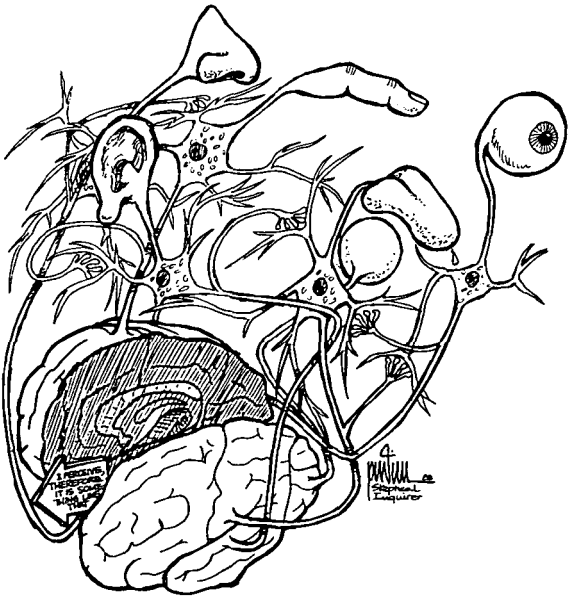
This processing of the speech heard is performed in segments and takes time. The time lag between hearing and perceiving is noticeable when you suddenly are aware of hearing someone speak to you but fail to understand the words; you respond with a prompt "Pardon?" just as the processed perception of the speech is presented to your consciousness, leaving you listening to a repetition of what you have just "heard."

Sometimes the system goes wrong, as when an otherwise unimportant repetitive sound you would not normally be aware of is annoyingly heard in an otherwise quiet environment. In such circumstances your perception of a dripping faucet can be amplified until it painfully dominates your consciousness.

The sense of touch is generally more reliable, except that some parts of the body are surprisingly far less sensitive than others. While you can localize to within one millimeter the point of a light stimulus applied to your lips or fingertips, the same stimulus applied to your thighs or body can only be located to within 50 or 60 mm. Similarly, you cannot distinguish paired stimuli from a single one if their separation is the same or less than these distances. (Both of these phenomena are the basis of clinical tests for the normality of the sensory nervous system.)

We are accustomed to considering vision to be the most important sense. Usually it probably is. Nevertheless, vision certainly isn't the most reliable of senses. Many books have been published about the rich array of visual illusions (e.g., Robinson 1972). When we "see," we can only perceive that which we recognize; if a totally unfamiliar image, or a familiar image in a very strange and unexpected environment, is presented, our visual system is momentarily confused and our consciousness will be presented with the nearest familiar approximation to what we have seen. This is probably the



origin of most "sightings" of ghosts and paranormal fauna (Czechura 1984). A notable recent example is Easdown's (1985) account of a brief sighting by a truck driver in Australia of what he perceived as a familiar, albeit 14-foot-tall, kangaroo, when in reality it was a normal-sized but unexpected camel.

Irregular outlines with varying color and lighting are difficult to recognize. In these situations, the poorly understood image is left out and the consciousness is presented with the uninterrupted background (Luckiesh 1965). This explains the effectiveness of camouflage and also the surprisingly large number of collisions where a driver, slowing down or stopped at an intersection, moves forward into the path of a camouflaged oncoming vehicle, only to protest subsequently that he had never seen it. In fact, he had *seen* it, but had failed to *perceive* it. A forward view of an approaching vehicle, especially a motorcycle, is an irregular outline full of varying shapes, colors, illumination, and shadows. On a straight road, it is stationary against its background, with only its size increasing in relation to its background to alert you to its presence. This perceptual error is so common and so hazardous that the daytime use of headlights by motorcyclists is now quite a common practice in many countries, and "running lights" are becoming available on safetyoriented production-line automobiles.

We also have a severe lack of appreciation of what we cannot see. Clinically this is apparent when a patient is found to have a reduced visual field because of degenerated retinal photoreceptors. It is often surprising to learn how far the damage and loss in the visual field has progressed before the patient becomes aware of the problem. He was not aware of what he could not see. Another (normal) aspect of visual perception can be demonstrated here. Close your left eye and look into the room: Can you identify any area within your visual field that you cannot see? Now, with your left eye still closed, focus your right eye on the darkened circle below and slowly bring this page closer to you from your farthest reach; between about 14 and 10 inches (360 and 250 mm) away the × will no longer be perceived.

The explanation for this is that within this distance range the image of the × falls on your retina where the nerve axons pass through the retinal layer as the optic nerve, and where there are no photoreceptors. Although you are blind to images falling here, you are normally unaware of this disability because you are unaware of your lack of visual ability outside your visual field.

There is a purely physiological aspect of vision in dim light. The class of retinal photoreceptors known as "cones" are good for bright color vision, and the "rods" are better for dim black-and-white vision. Yet there are only cones, and no rods, at the retinal fovea where the image we are focusing on falls on the retina. For this reason, we cannot see very dim images well when looking

directly at them. To demonstrate this, on the next cloud-free night traverse your gaze across the night sky. As your gaze approaches a very dim star (from an angular distance about equal to that of the diameter of the moon), you will "see" that star fade toward invisibility and then return to its former brightness. An associated phenomenon is that in dim light, when you are relying on your rod cells, you cannot "see" colors, a property of the less sensitive cone cells. Consequently, moonlit scenes are seen in black and white.

In dim light, paradoxically, many things are "seen"; just look at the increases in the number of UFO sightings at dusk presented by Molnar (1984). The positive after-image "seen" following a flash of light in a dim environment, known as "Bidwell's ghost," was recognized as early as 1894 (Walker 1985).

Temperature has a few quirks, too, mainly because it is a purely comparative sense; as any mother running her baby's bathwater can tell you, it is very difficult to judge the temperature of the water with the hand, and even the traditional elbow test is only marginally better. To demonstrate this, place each hand in a bowl of water, one at 15°C and one at 40°C. After three minutes, transfer both hands together to a third bowl of water at 25°C. Of the sensations that you perceive, which is "correct"? (Similarly, you cannot reliably perceive in absolute terms how much light there is; if photographers could, they wouldn't need to be burdened with light meters.)

In the same way, our perception of ourselves is often slightly different from reality. How often does the unexpected image of yourself (your reflection in a mirror while shopping in a store) startle you as being someone that you feel you should recognize but can't quite place?

The most familiar discrepancy between our self-perception and reality occurs when pathology produces pain in one of our visceral organs; because we cannot perceive as such these parts of ourselves, the pain is referred to the periphery supplied with sensory nerves by the same spinal segment. This is *referred* pain. It is the reason that the pain of a heart attack is so often perceived in the left shoulder and arm rather than in the heart itself.

Less familiar, but more dramatic, are the sensations projected to the perceived ends of irritated sensory nerves. This is particularly characteristic of amputations. Immediately following surgery, the sensations projected to where the ends of the sensory nerves used to be are so real that the amputee has difficulty believing and remembering that that part of the limb has been amputated. It is because of these phantom sensations that the recovering patient awakening from the anesthetic is so often disbelieving when informed that part of a limb had to be amputated. So vivid and convincing are these sensations that it is not unusual for a patient to persuade an inexperienced nurse that the only way to relieve an itch is for her to retrieve the lost limb so that it can be scratched!

A severe and tragic discrepancy between one's perceived obesity and reality is part of the cause of anorexia nervosa, the condition typified by the young girl literally starving herself in order to lose imagined superfluous inches.

Our perception of the qualities or abilities of others can be deliberately manipulated, and this is indeed a large part of a physician's "bedside manner." It isn't the physician's abilities as demonstrated by any objective evidence that inspires confidence in the patient, but his *perceived* abilities.

The unreliability of our individual senses is further demonstrated when we examine the recollections of observers of recent incidents. Eyewitness testimony is commonly thought to be the most reliable form of evidence in a criminal investigation. Numerous experiments, however, have repeatedly shown that being present at the scene of a crime, or even watching such an incident, does not necessarily qualify one to describe what actually happened or to recognize the participants later (Buckhout 1974). Indeed, erroneous eyewitness testimony is remarkably frequent. The errors are due to subconscious elaboration and the filling in of any gaps in perception, the movement of the scene of the incident closer to the observer's position, and the rearrangement of events and roles according to preconceived ideas. The "facts" that fit the most obvious interpretation are the ones believed, regardless of reality. The extent of such revision increases with the time elapsed since the incident. And this is without taking into account the psychological influences that encourage one subconsciously to revise one's recollections to agree with the evidence of other witnesses, the authorities, and so on; nor does it include the effects of one's racial, sexual, and other prejudices.

The most common situation calling for eyewitness testimony is a traffic accident. Unfortunately such testimony is just as unreliable, even when obtained from experienced motorists. It is not uncommon for a witness to be wrong about such simple things as the number and colors of the vehicles involved and the geometry of the junction, let alone about what actually happened (Carr 1974). Indeed, tests have shown that few observers have perceived every aspect of an incident correctly. It seems that our recollection of what we perceived, whether a crime or a traffic accident, unhappily bears little resemblance to what actually happened.

Everyone is aware of how far our perception of people's character can deviate from reality. An example is the fictional poorly dressed, inconsequential man who later is revealed to be both extremely wealthy and extraordinarily influential (see Shute 1938). Nevertheless, how many of us have been surprised to find that a colleague whom we had long regarded as aloof, snobbish, and unfriendly is in reality just unusually shy. Our perception of a politician's ability to govern is based more often on his or her physiognomy, mannerisms, and style of speech than on any real evidence of an ability to govern. Even supposedly rational scientists will often be concerned more with the appearance and style of job applicant, or a candidate for a grant, than with the content of what is said.

An understanding of the physiology of our senses enforces the view that our consciousness is presented with an approximate simulation of reality. In most instances this simulation is good enough. However, in certain environments an erroneous simulation can lead to a sincere belief in the sighting of a UFO, a mythological animal, or a ghost, or the absence of approaching

traffic. We can also be led seriously astray by subtle misperceptions when recalling an incident or interviewing an applicant. As skeptics, we will do well to bear these limitations in mind when assessing the evidence presented by others, as well as our own.

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Do I See Less or More?

"The stars are made of the same atoms as the earth." I usually pick one small topic like this to give a lecture on. Poets say science takes away from the beauty of the stars—mere gobs of gas atoms. Nothing is "mere." I too can see the stars on a desert night, and feel them. But do I see less or more? The vastness of the heavens stretches my imagination—stuck on this carousel my little eye can catch one-million-year-old light. A vast pattern—of which I am a part—perhaps my stuff was belched from some forgotten star, as one is belching there. Or see them with the greater eye of Palomar, rushing all apart from some common starting point when they were perhaps all together. What is the pattern, or the meaning, or the *why?* It does not do harm to the mystery to know a little about it. For far more marvelous is the truth than any artists of the past imagined! Why do the poets of the present not speak of it? What men are poets who can speak of Jupiter if he were like a man, but if he is an immense spinning sphere of methane and ammonia must be silent?

—Richard P. Feynman (1918-1988)

The Feynman Lectures on Physics, vol. I, quoted in an "In Memoriam" statement by the California Institute of Technology after Feynman's death on February 15, 1988.

Wegener and Pseudoscience: Some Misconceptions

Cranks are wrong in using the rejection of Wegener's theory of continental drift as a weapon in discussions about pseudoscience. Yet neither is this theory a borderline case between science and pseudoscience.

Nils Edelman

RECENTLY I happened to read some views on Alfred Wegener's theory of continental drift. According to Martin Gardner (1983, p. 373), cranks have used Wegener as a weapon in discussions about pseudoscience. Daisie and Michael Radner (1982, pp. 88-92) consider Wegener's theory a borderline case between science and pseudoscience. I will explain why I cannot agree with either of these views.

Gardner discusses Philip Stuart Kitcher's book *Abusing Science* (1982) and writes: "Cranks are forever citing [Wegener's theory] as a proof that orthodox scientists oppose novel theories for irrational reasons. The truth is that the establishment had excellent reasons for not embracing Wegener's theory until the discovery of plate tectonics provided a mechanism for it." This gives an erroneous idea of Kitcher's view. Kitcher (1982, p. 171) writes: "An ideally rational and open-minded scientific community, faced with Wegener's theory and Wegener's evidence, would have done what the actual scientific community actually did. Because of its ability to address some unsolved problems, Wegener's proposal earned the right to scientific discussion. Because Wegener was clear and definite in stating his theory, his views could be discussed. Because this theory encountered a grave difficulty, it did not displace the orthodoxy of the 1920s, but it persisted as a minority view."

In America most geologists—with the exception of Daly and van der

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Alfred Wegener

Gracht, for example—rejected Wegener's theory, partly for geophysical reasons and partly for emotional ones. About a decade before paleomagnetic studies began to corroborate the drift, renowned structural geologist Bailey Willis (1944, p. 511) wrote: "Thus the theory of continental drift is a fairy tale, ein Märchen." Anthony Hallam (1983, p. 148) summarizes the situation in America during the 1930s and 1940s as follows: "The minute number of staunch adherents tended to be dismissed as cranks, especially in the United States, a point of considerable sociological interest. A large number of people were either noncommitted or had a sneaking sympathy with the ideas of Wegener and du Toit, but considered it professionally wise to keep fairly quiet about it." Such a situation gives the impression of an emotional attitude rather than a rational one.

The forces proposed by Wegener were quite insufficient to move continents. Yet there was a large amount of field evidence supporting continental drift, and the leading American geologists threw out the baby with the bathwater. The geophysical calculations were made on the mistaken assumption that the continents were moving in the underlying mantle; today we assume that the continents move together with the upper part of the mantle over the plastic lower part.

In the Old World the situation was different. Hans Cloos (1936, p. 468) wrote that most geologists first opposed Wegener's theory but that two decades later the situation had changed and many geologists accepted it without believing in the proposed forces. Argand and Staub, well versed in alpine overthrusts, accepted that continents moved. A. L. du Toit (1937) from South Africa collected ample evidence for the connections between continents, showing that they must have moved apart. B. A. F. Molengraaff (1928) proposed that the Mid-Atlantic Ridge was the cicatrice left after the disruption of America from Europe-Africa, and he compared it with the East African Rift Valley, quite a modern idea. Arthur Holmes (1931) proposed convection currents in the mantle as the driving mechanism, which is very similar to the assumed mechanism of plate tectonics. Pentti Eskola, revising

Wilhelm Ramsay's textbook *Geologiens Grunder* (1931), related Wegener's theory in a positive sense, pointing out that it was the best explanation for the Permo-Carboniferous ice age in the southern continents. The Dutch geologists in Dutch East India (Indonesia) were as a rule supportive of continental drift. Many of the abovementioned supporters of Wegener's theory were world-renowned geologists.

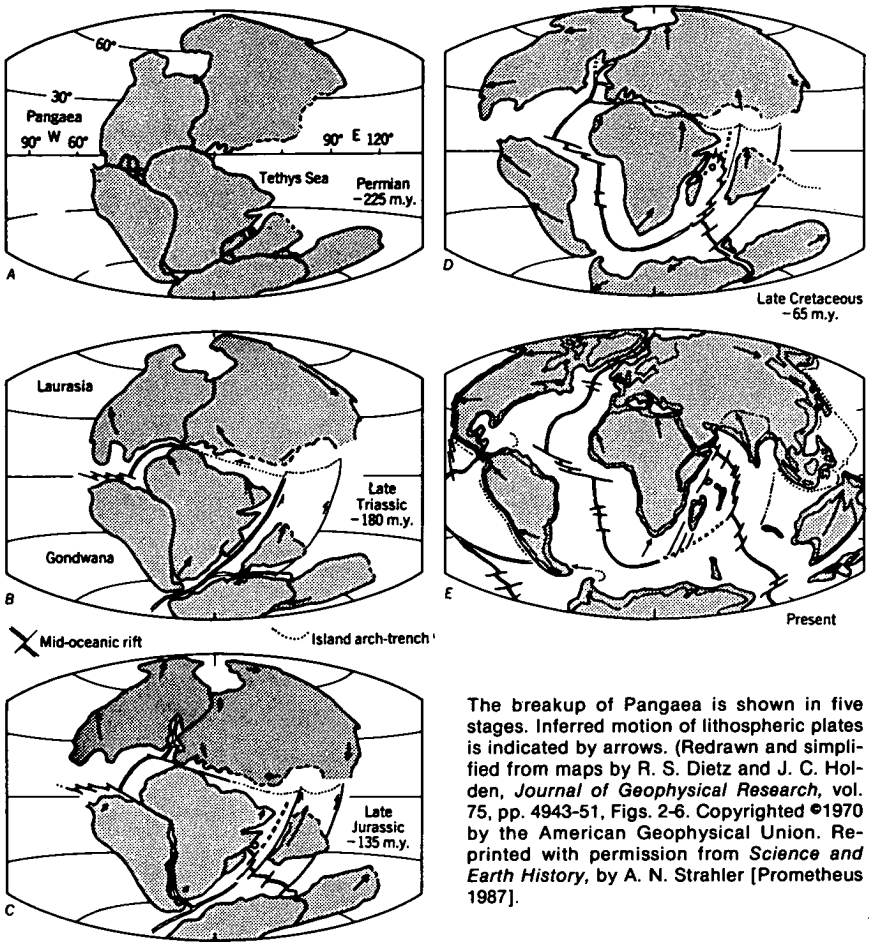
Differences in training in structural geology may have contributed to the differing views of American and European geologists about Wegener's theory. European geologists were acquainted with large horizontal movements in the Alps caused by the drift of Africa against Europe. American textbooks in structural geology, on the other hand, dealt principally with vertical movements along faults in flat-lying strata and treated folding and thrusting rather superficially (Leith 1913; Nevin 1931; Billings 1954). Only Willis (1923) dealt with folding a little more thoroughly.

In their otherwise excellent *Science and Unreason,* Daisie and Michael Radner (1982, pp. 88-92) discussed Wegener's theory and classified it as a borderline case between science and pseudoscience. As justification, they cite two of the most stubborn American opponents of Wegener without judging their arguments. Rollin T. Chamberlin (1928, p. 87) wrote: "Wegener's theory in general is of the foot-less type. . . . It plays a game in which there are few restrictive rules. . . ." However, Wegener's theory was a jigsaw puzzle with clear rules: The pieces should fit together and they should give a coherent picture. Wegener's reconstruction met these requirements; and the better the geology of the continents was mapped, the clearer the picture became.

Hallam (1983, p. 127) wrote: "Chamberlin listed no fewer than 18 points which he considered destructive of the drift hypothesis. Many of these seem downright foolish today." Some of these were foolish already in 1928. Chamberlin (1928, p. 83) used emotional arguments, for example, beginning his paper with a quotation of another geologist: "Can we call geology a science when there exists such difference of opinion in fundamental matters as to make it possible for such a theory as this to run wild?"

Radner and Radner also cite Berry (1928, p. 194), who wrote of Wegener's method: "This, in my opinion, is not scientific, but takes the familiar course of an initial idea, a selective search through the literature for corroborative evidence. . . ." Many new theories begin with ideas followed by studies of the literature, in nature, or in laboratories. One of Berry's objections (1928, p. 195) concerned Wegener's geodetic measurements, which gave velocities of 9 to 32 meters a year for the westerly drift of Greenland. Berry rightly points out the sources of the errors, but then he states that the movements "are of much less order of magnitude than the known changes in the interior of continental masses due to overthrusting." Here Berry compares velocities with distances, either a cardinal error or a dirty trick. Wegener's determinations of the velocities were far too great, but with such velocities continents would take a turn around the earth in a few million years, which is much more than the overthrusts in mountain ranges.

Radner and Radner (1982, p. 90) compare Wegener with Velikovsky:



The breakup of Pangaea is shown in five stages. Inferred motion of lithospheric plates is indicated by arrows. (Redrawn and simplified from maps by R. S. Dietz and J. C. Holden, *Journal of Geophysical Research,* vol. 75, pp. 4943-51, Figs. 2-6. Copyrighted ©1970 by the American Geophysical Union. Reprinted with permission from *Science and Earth History,* by A. N. Strahler [Prometheus 1987].

"Wegener charted the paths of his wandering continents. Velikovsky charted the paths of the wandering planets." There is, however, an immense difference. Velikovsky violated well-founded physical laws without any evidence other than old myths. Wegener, on the other hand, presented a theory based on paleoclimatological, paleontological, and geological observations treated according to the rules of the jigsaw puzzle. His theory replaced the ad hoc hypotheses of sunken continents, for which there was no evidence from deep-sea investigations, from gravitational measurements, or from present continents. The sunken continents were invented only to explain similarities in fossil fauna and flora on different continents. Wegener's theory explained not only these but also many other geological problems, e.g., the Permo-Carboniferous glacial formations in South America, South Africa, Madagascar, India, and Australia, and the problem of an ice age at low latitudes on different continents on both sides of the equator.

We can summarize by saying that Wegener's theory was based on a multitude of scientific facts and that it cannot be classified as a borderline case between science and pseudoscience. In America it was rejected partly for the proposed erroneous mechanism, partly for emotional reasons. In the Old World many prominent geologists accepted continental drift without approving the mechanism. The statement of cranks that the scientific establishment opposed Wegener's theory for irrational reasons is hence a half-truth that does not release them from the obligation to present positive reasons for their ideas.

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Plan Ahead for the 1989 European CSICOP Conference

CSICOP's second European conference will be held at the resort of Bad Tölz, near Munich, Germany, from May 4 to 7, 1989. Our hosts will be the West German Society for the Scientific Investigation of Para-Science. Speakers will include European experts on topics of particular importance in Europe and several members of the CSICOP Executive Council. Simultaneous translations into English, German, and Spanish will be provided.

Programs and registration forms will be mailed to all European subscribers to the SKEPTICAL INQUIRER (including those in the U.K. and Ireland). If you live outside Europe and would like to attend, write to Mary Rose Hays, CSICOP, Box 229, Buffalo, NY 14215 for a copy of the program and registration form.

There will also be a CSICOP conference in North America later in 1989. Details will be published in the SKEPTICAL INQUIRER when the time and place are finalized.

An Investigation of Psychic Crimebusting

What does a reporter find when he checks claims of a 'psychic detective'? A textbook case of changed stories, misleading information, and assertions that don't stand up to the facts.

C. Eugene Emery, Jr.

IN THE ANNALS of psychic crimebusting, the case of self-proclaimed clairvoyant Normand G. Joyal is one for the record books. On January 7, 1987, Joyal walked into the Holliston, Massachusetts, police station and announced that he had found a body in the septic system at the rear of the Village Plaza shopping center. Hours later, police and fire officials retrieved a body identified as Jacques "Jack" Martel, a 16-year-old who had disappeared November 5, 1986. Investigators later ruled that Martel had drowned in the septic tank after accidentally falling in.

The case made an instant celebrity out of Joyal, a Woonsocket grandfather born on December 4, 1926, who said he gets his psychic visions from God. For days, reporters flocked to his modest apartment to hear how he found a body that had eluded searchers for two months. He told them he was drawn to the shopping center's septic system because of a vision he had on Saturday, January 3, when Martel's name "shot right across my mind." The name was instantly replaced by an image of the body beneath pipes like those you find under your sink. The next day, he said, he got an image of six pipes. When he went to the shopping center, he saw six manhole covers at the rear of the shopping center and immediately connected them to his vision. Next, he prayed over each manhole cover and had a vision of the body beneath one of them. Then he talked the town building inspector into returning with him, and they lifted the cover and discovered the body floating in the sewage.

Police confirmed that Joyal had made inquiries about the shopping center

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that weekend, days before he walked into police headquarters to say he had found the body.

But there was more.

Joyal said—and the media duly reported—that he had helped police find the bodies of eight other youngsters since he began seeing visions nine years ago.

Skeptics might have passed the incident off as pure luck. After all, if you have enough psychic crimebusters making enough predictions about enough cases, one of them is going to get lucky once in a while.

Yet two days later the news broke that Joyal was being credited for discovering the body of another person, who had been missing since December 26.

At first blush, the case of Normand Joyal seems to be a spectacular example of how psychics can solve cases that have baffled police. Instead, the case of Normand Joyal turns out to be a textbook example of a psychic who changes his story and gives misleading information, and of reporters who, despite the extraordinary psychic claims made by Joyal, never found the time or never made the effort to confirm key facts, facts that would have put Joyal's claims in a far different light.

First, some background.

Joyal says he became a conduit for God's visions after God appeared to him as a vision of molten gold. At first, Joyal denied that he had had any major personal problems at the time of the vision, but later conceded that God's appearance coincided with the time that his wife left him. The couple have since been reunited.

Currently a steel-press operator, Joyal has always had a passion for police work. When he was five years old, his family lived across the street from a fire station. "We always chased fires," he said. He has no fewer than three police scanners and says, "I love to listen to police calls."

He also considers himself a good detective. Long before his visions, he said, he tracked down the man who stole his '37 Chevrolet and also found the culprit who stole a stereo. Yet, when I asked him if his detective powers helped him find Martel's body, he said, "I have no power. These are the powers of God."

Normand Joyal, the police buff with a knack for playing detective, said his visions in the Martel case began on January 3. But, when questioned carefully, Joyal reported that he first visited the shopping center two weeks after Martel disappeared, which was a month and a half before his visions. Why did he go to the shopping center? He said he had read and heard news reports saying that the center was where Martel was last seen. Perhaps more important, weeks before he saw the vision that supposedly made him think of sewer pipes, Joyal went to the shopping center looking for the septic system. (Joyal, by the way, wasn't the first person to think of looking in the septic tank. It had already been searched at least twice.)

The next big clue came from Ivan Lopez, the Holliston building inspector who was with Joyal when the body was found on January 7.

Lopez got the impression when he met Joyal that the psychic had been to the shopping center very recently. Joyal, it turns out, had gone to the Village Plaza the day before, which was when he stood over each of the tank covers and prayed. Joyal said that when he stood on the first cover, the one with a "D" on it, he got a vision of the youth "full length like a three-quarter picture of him. He was dressed in summer clothes like you would have in July—a short-sleeved, light-colored shirt, light-colored pants."

But the next day, when Joyal convinced the building inspector to return with him and they lifted the first cover, they found nothing. The space beneath the cover was too small to contain a body. Joyal would later say he was not disappointed. The shape of the so-called distribution box beneath the manhole cover, he said, confirmed his belief that Martel's body was somewhere in the septic system.

But Lopez tells a significantly different story. The building inspector said he had the distinct impression that, once the first manhole cover had been lifted, Joyal was ready to give up the search. Lopez says it was his own idea to check beneath the remaining covers. "I'm an engineer and I like to be thorough. So I said, 'As long as we're here, let's check everything,' " Lopez recalled.

They tried to open the second manhole cover, but they couldn't. The plant growth over the cover, similar to the weeds you see living in sidewalk cracks, made it obvious that it had not been lifted in a long time. The same proved true with the third and fourth covers.

The fifth cover was actually a sheet of metal roughly three feet square. When Joyal moved the cover aside, Lopez had a third impression. He had the distinct feeling that Joyal had raised the heavy cover before.

In fact, Joyal *had* picked up the cover the day before he and Lopez came to the shopping center, a nugget of information Joyal apparently never offered in his interviews with reporters. When asked about it, Joyal admitted he had raised the metal sheet the previous day, but said he never really looked in the tank and never saw a body. The psychic said he was on his lunch hour and didn't have time to do a thorough search.

But that doesn't fit the evidence. The fact that Joyal had looked in the tank the day before—coupled with the fact that it appeared the other manhole covers hadn't been lifted in some time—would explain why Lopez got the impression that Joyal was ready to give up the search when Martel's body did not appear beneath the first manhole cover. (Joyal, by the way, said he "didn't see any reason to tell" Lopez that he had already taken a quick look inside the tank once before.)

Finally, it was Lopez—not Joyal—who knelt down, removed his glasses, stuck his head inside the tank, and saw the body floating in the middle of the tank between the fourth and fifth manhole covers. Lopez, fearing that he was seeing a body, asked Joyal to poke it with a stick. When Joyal reported that it had enough mass to be a body, the two returned to the town hall. Lopez went to see his boss, and Joyal walked into the police station to report the find.

When Psychics Falsely Accuse

YOU MAY BELIEVE that psychics are relatively harmless when they try to use their talents to help police solve crimes. But Forrest Hoxsie of Narragansett, Rhode Island, wouldn't agree.

Hoxsie was implicated in the 1975 disappearance of a five-year-old boy. He was named as a suspect, not by the hard evidence of a police investigation, but by the ill-founded hunch of a psychic Hoxsie never met.

The boy was Jason Foreman, who disappeared near his home in the village of Peace Dale in South Kingstown, Rhode Island, on May 18. As police and hundreds of volunteers from four states spent eight days in a futile search for the blond-haired, blue-eyed child, the psychics—up to 50 of them—came out of the woodwork.

Often flanked by television cameras, they sometimes made police search places that had already been examined. Detective Sergeant William Robertson recalled: "After we had gone through the Peace Dale mill complex with a fine-tooth comb, a psychic would come up to us and say, 'I was driving by the mill and I got vibrations of a boy trapped alive inside.' You'd have to pull ten to fifteen people off the search [to follow the tip] because you couldn't disregard it."

Some saw the boy near a local sand and gravel area, others saw him in the local pond. "It got so bad we had to drain the pond down to three feet of water to dispel the psychics," Robertson said. The draining took two days and turned up nothing.

"Another fellow sent us tape-recordings of someone under hypnosis. [He saw a gray car with a Rhode Island license plate with two letters.] When he was asked about it, he wasn't able to see any digits, just the letters SF," the detective said. "You had to listen to the tape for two hours to get the information, then you had to turn around and send two guys to the registry (of motor vehicles) to go through 999 registrations to see if there's a gray car with the license plate SF."

The police followed up the tips because, Robertson said, "after the first 24 hours, you start to grab at straws [and because] police have to protect themselves. You have to ask, 'Suppose the psychic snatched the boy?' By not going back and searching where they say, you might miss something."

Because the case was unsolved, I used it as a test for any psychic who claimed to be able to find missing persons. One who accepted the challenge was William J. Finch, who said he was a former police chief in Erie, Pennsylvania. Finch, now deceased, was a man who believed that psychic powers—including his own—were a valuable tool for helping police crack tough cases. He had formed the Society for Psychic Investigation and hoped that it would be a clearinghouse for psychic information that would help police solve crimes. In September 1980, I asked Finch to demonstrate those powers by finding the Foreman boy.

He agreed, and I sent newspaper clippings of the case to him at his Arizona home.

Finch responded with a series of impressions about the crime and the kidnapper. Toward the end of his letter, he said, "Usually I avoid pointing a finger until more facts are available, but I would like a rundown on anything you can get on the man who ran the Hoxie [*sic*] Arco station at the time, whether he has any record, whether he was a suspect, whether Jason's father bought his gas there very often, his present state of health, and anything you can get on his activities since Jason disappeared."

How did Finch, a man who had apparently never been to South Kingstown, know there was a Hoxsie Arco station there? When I checked the clips I had sent him, I found several references to the station.

When Finch was informed in a subsequent letter that Hoxsie was not a suspect, the psychic investigator persisted. "I fully realize Mr. Hoxie [*sic*] was not a suspect," he wrote a month later. "But it wouldn't be the first case where an unsuspected person was the culprit." (Other psychics, including Normand Joyal of Woonsocket, R.I. [see accompanying story], have told me they routinely furnish first names, initials, and even complete names to police whenever they can. In one unsolved case, Joyal says, he has pinpointed a suspect and has given police a name.)

On April 16, 1982, nearly seven years after the boy disappeared, Jason Foreman's bones were found a few hundred feet from his home in a cardboard box in the cluttered second-floor bedroom of 23-year-old Michael Everett Woodmansee. The bones had been boiled clean of all flesh. In a plea-bargaining agreement designed to prevent the grisly details of the boy's death from being revealed in a trial, Woodmansee pleaded guilty to a charge of second-degree murder. On February 24, 1983, he was sentenced to 50 years in prison. Finch, it turns out, had laid his suspicions on the wrong man.

When Finch's letters were shown to Hoxsie for the first time in January 1987, he found them humorous—up to a point. "It doesn't bother me now. But if the case wasn't solved, I would have been quite upset," said Hoxsie, who let police use his service station as a field headquarters during the search for the Foreman boy.

"But suppose I hadn't been born and raised here all my life, if I had just moved into town," Hoxsie said. "God only knows what would have happened. It could have caused me a lot of grief. If we had a police department that thought these [psychics] knew what they were talking about, they might have gathered enough circumstantial evidence that I could have gone to jail."

—C. Eugene Emery, Jr.

To summarize, the evidence suggests that Joyal: (1) came to the shopping center before his vision, suspecting (as others had) that the body might be in the septic system, (2) lifted the manhole cover that would have allowed him to see Martel's body and missed the body, (3) picked the wrong manhole cover and was ready to give up the search when there was nothing beneath it, and (4) watched as someone else—the building inspector—found the body. Joyal himself confirms points 1, 2, and 4, but only when directly confronted with the issues. When he's allowed to tell the story in his own way, he (intentionally or unintentionally) omits the key points or phrases information with an ambiguity that seems to make his story more impressive.

There are a few footnotes to this case. First, when Martel's body was recovered, he was wearing the winter clothes he was last seen in, not the summer clothes envisioned by Joyal. Second, police theorized that Martel died because he wandered to the back of the shopping center looking for a ramp to help move a computer. He apparently spotted the metal sheet covering the manhole, lifted it without realizing there was a gaping hole beneath it, and stepped into the hole. The medical examiner was unable to find any marks on the body to indicate foul play or to show that Martel hit anything before the sheet fell down on top of him.

Joyal's next "success" came two days later, on January 9.

That afternoon, Joyal had received a call from Virginia DeSantis of Worcester, Massachusetts. Two weeks before, on the day after Christmas, DeSantis's aunt, 54-year-old Jean Pasquale, had disappeared while driving to a family gathering in Orwell, Vermont. The family had searched frantically for the woman, assisted by the Boy Scouts, who posted "missing" posters in storefronts and town halls throughout the state. The relatives had even hired a plane to fly along the route she was supposed to have taken.

When Mrs. DeSantis, who had already consulted a handful of psychics, heard about the Martel case, she called Joyal. Both agree the time of the call was about 4:30 P.M.

Joyal said he believed Mrs. Pasquale's car went over an embankment along the main highway and into a body of water—a lake, a river, or something that would have made the car difficult to find. He said he would meditate on the case overnight and perhaps get one of his visions.

But that same night the news broke: Mrs. Pasquale's body had been found. Her car had indeed gone down an embankment, and she had died from injuries from the crash. The car, found by some public works employees on Route 7 near Post Road, was resting near a brook.

Joyal immediately took credit for the discovery, and the news was telegraphed around the region. On its 11:00 P.M. broadcast, WJAR-TV (Channel 10 in Providence) said the body had been found only a few miles from where the Woonsocket psychic had said it would be. Other stations apparently also carried the story, as did United Press International.

But DeSantis was astonished by the news stories because she had never relayed Joyal's information to officials. "I don't know how he can take credit for it when nobody was notified of it," she said. DeSantis had not called

police because other self-proclaimed psychics had also mentioned water and an embankment. Those predictions had already prompted her family to travel the 200-mile route to Orwell and discover that "you could see water and embankments all the way."

In addition, because Joyal never gave a specific location to look, she said, she was "shocked that night on the news when it said [Joyal] was 15 miles off on his prediction."

It wouldn't have been hard for the reporters who credited Joyal to check his claim. State Police easily confirmed the next day that it was not a psychic's tip that led them to Mrs. Pasquale's body. "We didn't get any calls about *any* idea of where the vehicle was," said Vermont State Trooper Paul B. Cucinelli. "It just so happened the [public works] guys were out behind one of the state barns cutting some poles. They just happened to look across the brook here and spot the car." Cucinelli said the car did not go in the water and, when it was found, it was clear why the airborne searchers had missed it. "It was in amongst some trees. The carriage was facing up, with just the rust color showing. It looked like a conglomeration of trees and rocks."

Yet Joyal still claimed credit for the find—even after learning that DeSantis had not relayed the information to authorities—because, "If I hadn't given the reading, they'd still be looking for her."

Not true. Vermont State Police confirmed that Mrs. Pasquale's body was found at 3:30 P.M., a full hour *before* Joyal made his prediction.

The case had another twist. The day after Mrs. Pasquale's body was found, Joyal stressed that his advice to DeSantis came from him, not from God. Mrs. DeSantis and one other reporter confirmed that. But two weeks later Joyal had changed his story, insisting that when he spoke to DeSantis he had no doubt at the time that God was speaking through him. "You can feel something going out of your mouth," he said. "It's like vapor air. You know when the Lord is talking."

And what about Joyal's past successes, which were widely reported in the media? There were eight in all.

There's the drowning of a Blackstone, Massachusetts, boy who fell through the ice in the Blackstone River in 1978. Joyal said he knew where that body was. But, when questioned carefully, Joyal admits he never told police about his vision. In fact, the body was never found.

There's the drowning of two-year-old J. C. Barnes, who also fell into the Blackstone River around 1983. Joyal said the child's remains were found at the spot he had seen in a vision. But again, he admits, he didn't tell anybody.

There's the 1983 murder of a six-year-old girl who was found dead, tied to a tree in the Quebec woods. Joyal said he had a vision of the bridge near the site where the body was found. But "they didn't find her on account of my vision. My error was I did not go to the city police immediately."

And there's the 1986 drowning of a five-year-old Cranston, Rhode Island, boy. Joyal says he had a vision of the child that coincided with the time the boy's body was discovered by an off-duty policeman. But, again, he was never directly involved in the case.

These are four "successes" in which Joyal would have admitted—if reporters had bothered to ask him—that he didn't really play a role.

Let's consider the others.

There's the case in Milford, Massachusetts, of a woman and her three children who were burned in a house fire started by her ex-boyfriend. Joyal said he had a vision about that, too. But Chief Vincent W. Liberto said investigators "got nothing from a psychic," and if a psychic is claiming credit for helping with the case "it's a total hoax as far as I'm concerned."

There's the 1983 drowning of five-year-old Christopher Joyce in Framingham, Massachusetts. Joyal said the body was found exactly where he said it would be—stuck in a group of three trees in the river. But Lieut. Dominic Ferrazzi of the Framingham Police Department said the boy's body was recovered in a metal mesh strung across the water beneath the Potter Road bridge.

There's the 1985 case of 21-year-old Kathy Demers, murdered by her boyfriend and thrown in the Blackstone River. But Woonsocket Det. Sgt. Oscar P. Sevigny said Joyal, a longtime friend, only reported seeing a "body of water" and an "Indian." The information, Sevigny said, was too vague to be useful.

Finally, there's the 1986 drowning of a 13-year-old boy who fell off a styrofoam raft in the Seekonk River in East Providence. Joyal said he told police divers that he had a vision of "something round, something white, like these pipes here. The following afternoon at three o'clock they found him under the pipes." But Lieut. William C. Sloyer of the East Providence Police Department, the man who talked to Joyal, said Joyal's information was not helpful because the searchers were already looking near the pipes (that's where the boy fell in). In fact, Sloyer said, the body was not found under the pipes, but about 25 yards further north.

So in the end, Joyal has no verifiable successes among those past cases. Yet they were often reported in the press because, as in the Pasquale case, the reporters didn't check out Joyal's extraordinary claims.

"He's never found anyone before," said Holliston Police Chief Laurence Marsell. "He fits the pieces to the puzzle after the things go together."

There's one final twist to the case of Normand Joyal, psychic sleuth.

During his investigation into the disappearance of a Wayland, Massachusetts, girl named Sarah Pryor, he said, he was told through a divine vision that he would be gunned down before the end of 1987, murdered by the child's killer.

"When I am killed," Joyal said, "they [the authorities] will go back to what I've told them and find out who killed Sarah Pryor."

He has said that God's visions are never wrong.

But fortunately for Normand Joyal, as of this writing he is still in business. •

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High-Flying Health Quackery

Pseudoscience soars in airline gift catalogues.

Terence Hines

A QUACK has been defined by the U.S. House of Representatives Select Committee on Aging as "anyone who promotes medical remedies known to be false, or which are unproven, for a profit" (Pepper 1984, p. 4). One usually thinks of blatant health quackery as being confined to supermarket tabloids and similar publications. But if the ads in the Trans World Airlines Getaway Shoppe gift catalogue are any indication, it has gone upscale. Other airlines' catalogues carry some of the same ads. On a recent flight, I acquired a copy of TWA's, which reprints sections of various other companies' catalogues. Mixed in with the usual ads for overpriced golf accessories, calculators, knife sharpeners, date books, and the like, one finds an astonishing number of ads for quack products and devices.

JS&E, of Northbrook, Illinois, carries ads for four wonders of health quackery. The first is for two 1-ounce bottles of Hawaiian "miracle oil" for $29.92. Just what is this miracle oil? The gushing write-up by Joseph Sugarman (presumably the "JS" of JS&A) describes how he discovered this oil being produced by a carpenter in the back of a local beauty shop in Kihei, on Maui. Sugarman assures us that after he purchased a sample of the oil "the miracles started." The oil cures sore and stiff muscles. It increases strength and endurance when applied before exercise. Sugarman knows all this because he tested the oil on himself. Just to be sure, "clinical tests" of the oil were conducted. Such details as where these were done are left out, but "weight lifters using the oil saw as much as a 20% increase in their strength compared to those athletes who did not use the oil prior to exercise."

And how, one might inquire, does this miracle oil work? The answer is classic pseudoscience doubletalk: "The oils are made from plants" and contain the "essential oils" that help the plant to combat fungi and other problems. These oils penetrate human skin and "go straight to the muscle tissue," where they work their wonders by removing lactic acid, a product of muscle use. Of

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course only "a few people in the world" know how to produce the oils.

Another JS&A product offering is an anti-aging cream. The full-page ad announces: "Scientists demonstrate conclusively that the effects of aging can be slowed considerably." The grounds for this claim are not mentioned in the ad, but Sugarman describes the product in glowing terms: "All the garbage in the environment—the chemicals and the pollution in the air" are absorbed by the skin. "The cells become clogged and toxins are absorbed by our bodies." The new wonder skin-cream (only $24.95 for a 30-day supply) counters this process by promoting a "greater frequency of cell turnover."

In fact, there are no creams available over the counter that can reverse the aging process, in spite of the fact that the cosmetics industry constantly makes such claims. The various, and often very expensive, anti-aging creams sold are nothing more than moisturizers. They make wrinkles appear to go away for a while by increasing the water content of the skin and "plumping up" the face. The Food and Drug Administration recently ordered many of the major cosmetics firms to stop claiming that their creams and potions have any effect on the aging process (Moser 1987). A study by *Consumer Reports* showed that there was an inverse correlation between the price of a moisturizer (whatever it was called by the manufacturer) and its effectiveness (*Consumer Reports* 1986).

Recently, the use of a skin cream containing retinoic acid, a derivative of vitamin A, as an anti-aging treatment has received considerable attention in the popular press. This stems from a study (Weiss et al. 1988) in which use of the cream for a 16-week period resulted in some improvement in the appearance of the skin along with histologically verified changes in the structure of the skin. The results have been exaggerated in the media. Roberts (1988) points out that the benefits, although real, were undramatic in the great majority of subjects. Whatever the final outcome of further studies of retinoic acid as an anti-skin-aging substance, it is important to realize that the substance is available only in prescription products and is not found in any over-the-counter cream. Nor is retinoic acid the same as vitamin A, although the former is derived from the latter. Thus findings like those of Weiss et al. (1988) give no warrant to claim that skin creams high in vitamin A content will slow or reverse the skin-aging process. Although no such claims have yet been made, to my knowledge, it would not be surprising to see them popping up in the near future.

The third JS&A ad is provocatively headed "Stop taking vitamins." Dare we hope that we will be told that all those vitamins so many people take are useless? No. The pitch here is that we've all been taking our vitamins at the wrong time of day. Some vitamins should be taken in the morning and some at night; otherwise they won't be of any benefit. Naturally JS&A is ready to remedy this problem. It has been selected to introduce a "medically formulated vitamin program" that was developed by a group of "nutritionists, dieticians, dermatologists, biochemists, and physicians." It was found that the diet regimen "was ideal for weight-loss programs and was ideal for people under stress. It helped many increase their energy levels. Smokers

Miracle Oil of Hawaii
I discovered the oil by mistake. But what it did was no mistake. I was experiencing a miracle.
Stop Taking Vitamins
If you think the vitamins you are now taking are doing you any good, wait until you hear the latest news on why they may not.
Anti-Jet-Lag Formula Offers Jet Age Relief For Air Travelers
10 Years Younger
Scientists demonstrate conclusively that the effects of aging can be slowed considerably.
Solutions
Products that make life easier
THE EXTRACTOR
A $13 investment could save your life.
Clean Fresh Air Bubble
Surround your body or your work place with ion-controlled fresh air in America's finest bipolar electrostatic home precipitator.

benefited. Some under medication benefited." And what will this wonder vitamin program cost? Only $24 for a two-month supply.

The final quack offering from JS&A is a "bipolar electrostatic home precipitator." A what? Well, it's really just an ion generator that also filters dust out of the air. Sugarman's description of this little wonder starts off with a scare tactic: "There's a real danger." That danger, it seems, is in your home in the form of air polution. Not only does the bipolar electrostatic home precipitator remove pollution, it generates negative air ions and "controls and shapes the ions to create an ion bubble" around the device. And all this for only $99, plus a $3 delivery charge.

Actually, the claim that negative air ions have beneficial effects has been around for some time. Negative and positive ions do seem to have some effects on behavior, but they are small and very inconsistent. (See Hines 1988.)

Another firm to offer dubious devices in the TWA catalogue is Syber-Vision, of Newark, California. SyberVision sells self-improvement videotapes. Not subliminal tapes, mind you, but tapes produced by leading sports figures. So, if you want to improve your skiing, there is a tape in which Jean-Claude Killy will show you how to do it. So far, so good. Certainly watching an expert can give valuable clues about how to improve a skill, especially if the expert provides a good narration. There is also the effect of "mental practice." Rehearsing a motor skill mentally has the effect of improving performance. But the effect is a very small one (Feltz and Landers 1983).

SyberVision's claims for their tapes go well beyond the mere effects of mental practice. In fact, you don't have to practice at all. Just lie peacefully on your couch and watch the tapes and your brain and muscles will auto-

matically, and without effort, be programmed with new levels of skill, because "SyberVision is activating your nervous system to absorb and remember every move." How is this possible? "The movement (on the tape) is executed at a mathematically precise tempo and rhythm that activates your brain's visual learning mechanism. The neuromuscular impulses repeatedly travel from your brain to your muscles, etching pathways of performance excellence into your memory. Your muscles are being trained to remember perfect form." Such claims are totally without support and are flatly contradicted by what is known about motor-skill learning. (See Welford 1976.)

The Sporting Edge, of Bothell, Washington, has three offers in the catalog. The first is for an "anti-jet-lag formula" that "can actually beat jet-lag before it occurs." What is this nondrug miracle substance? You guessed it: vitamins. And what will it cost you? A lot—$29.95 for a 12-day supply (one *pound*—now that's a lot of vitamins), $49.95 for a 30-day supply (also, puzzlingly, one pound), and $89.95 for a 60-day supply (two pounds). In fact, the only effective treatment for jet-lag, other than simply waiting for it to go away, is to use triazolam, a benzodiazepine (Seidel et al. 1984). Unfortunately, this drug can cause transient global amnesia when taken with small doses of alcohol (Morris and Estes 1987).

This company also offers an anti-snoring device that has been "proven effective." By whom or where, we are not told. This device is worn strapped to the wrist at night. This is how it works: "An audio sensor detects the first sounds of snoring, then emits a gentle static pulse. The pulse travels through the nervous system to the brain, where it interrupts the snoring pattern . . . without disturbing the wearer's sleep." And only $39.95!

The most expensive quack device offered by the Sporting Edge is the Novafon. This emits sonic waves that, the reader is assured, "relieve aches and pains of sore muscles and joints." It's priced at $159.95.

The final quack product listed is also the most dangerous, as it is potentially fatal. This is "The Extractor," offered by Solutions, of Portland, Oregon. The ad tells us that "a $13 investment could save your life." The Extractor is used to suck snake or other kind of venom out of your system after you've

been bitten. It is a small pump that works as follows: "Simply place the Extractor over the bite, push the plunger, and it sucks the venom from the body." Also mentioned is the fact that a safety razor comes with the device. For the Extractor to work, you have to cut yourself at the site of the bite. The trouble here is that the "cut and suck" method of treating snakebite is not only worthless, but actively dangerous. Youngberg (1987), writing in the journal *Emergency Medical Services,* notes that this technique results in removal of less than 10 percent of the injected venom. "Many laypeople are too vigorous when making incisions," says Youngberg. "This results in serious deep-tissue damage and significant scarring, without improving patient outcome" (p. 49). Thus, contrary to Solutions' claim, a $13 investment in the Extractor could kill you, expecially if the belief that the device had removed the venom led you to be less than extremely prompt in seeking professional treatment.

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The Bar-Code Beast

Do supermarket bar codes really contain the dreaded 666 sign of Satan? A look at the latest silliness of students of Bible prophecy.

Michael Keith

OVERZEALOUS students of Bible prophecy have no trouble finding instances of 666, "the number of the beast," everywhere. (Two classic books on this subject are *When Your Money Fails,* by Mary Stewart Relfe, and *Satan's Mark Exposed,* by Salem Kibran, both still in print and well known among 666-aphobes.) Besides the many preposterous claims made by such people, there is one that almost seems plausible and is therefore worthy of official debunking. This is the claim that the number 666 can be found in the UPC (Universal Product Code) symbols now printed on most grocery items. This supposed discovery is particularly significant, so they say, because according to Revelation 13:17 "no one could buy or sell" without the "mark of the beast."

FIGURE 1

This "discovery" is illustrated by the sample UPC code shown in Figure 1. Notice that this particular code contains several 6s, which are represented in the UPC code as two thin bars separated by a single space. Now, notice that,

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in addition to the ten encoded digits, there is a similar symbol (two thin bars separated by a space) at the beginning of the code, in the middle, and at the end. This makes three sixes: 666.

A little research into the UPC coding scheme shows that this "discovery" is a complete hoax. The UPC bar code encodes a simple binary bit sequence, with black and white elements of the code corresponding to binary 0 and 1 digits. The format of the bit sequence is as follows:

101	START
0001101	An "introducer" code, which says that the following codes are numerals
0001101	=0
0011001	=1
0010011	=2
0111101	=3
0100011	=4
01010	Center delimiter
1001110	=5
1010000	=6
1010000	=6
1000100	=7
1001000	=8
1000100	=7: a checksum equal to the sum of the encoded values modulo 10
101	END

From this, we see that the bit patterns at the beginning, middle, and end have no numerical significance and are in fact not even encoded with the same number of bits (7) as numerical values. The START symbol is a common feature of almost all bar-code systems and is used by the scanner to determine the speed with which the wand is being swept over the code. The center and END delimiters are used for error-checking. The identification of the delimiters with 666 is merely based on the visual similarity of the bit patterns of the delimiter and the first three bits of the symbol for 6. To reemphasize: the delimiters do not, and cannot, represent the digit 6, or any other digit, because they contain the wrong number of bits!

The center delimiter has one other interesting function. It divides the ten encoded digits into two groups of five. The UPC uses *two different* symbols for each of the decimal digits 0-9, depending on whether the digit occurs in the first half or the second half of the code. The two different symbols are simply the binary inverse of each other (1s become 0s and 0s become 1s).

There are now three responses to the argument "Okay, so maybe the three symbols do not represent the number 6, but they look visually identical to the symbol for 6—namely, two thin stripes separated by a space. Surely

FIGURE 2

this means something." The first response is: No, that does not necessarily mean something. It is probably pure coincidence. The second response is: This is only true for the "second half" 6 symbol. For example, Figure 2 is another UPC code that has 6s in it (but in the first half). These 6s, of course, do not look anything like the START, center, and END symbols, since they are represented by the code 0101111. It is indeed quite fortuitous: Whoever first "discovered" the 666 in the UPC must have picked up a box of Cheerios (or whatever) with 6s in the second half (rather than the first). Otherwise, this "mystery" might never have been uncovered!

FIGURE 3

The third point is illustrated by the UPC code shown in Figure 3. Note that in this example the symbol of two thin stripes separated by a space seems to stand for the number 3! We can thus make the following equally plausible argument. The three delimiters look like 3s, and there are three of them: 333. Three is the number of the Divine Trinity. Furthermore, notice that digits are encoded using seven bits! And seven is the number of Divine Perfection. Therefore, the UPC code was inspired by God.

Of course my argument is just as silly. The explanation is that the "second half" code for 3 is a cyclic permutation of the "second half" code for 6, and so also looks like the delimiters (when there is more than one 3 in a row). The moral, however, is an old one. If you permit yourself to read meanings into (rather than draw meanings out of) the evidence, you can draw any conclusion you like. •

Book Reviews

Extinguishing the Fires of Unreason

UFO-Abductions: A Dangerous Game. By Philip J. Klass. Prometheus Books, Buffalo, N.Y. 1988. 200 pp. Cloth, $18.95.

Robert A. Baker

PHILIP KLASS's latest contribution to responsible scientific journalism could not have come at a better time. When the definitive history of the pseudosciences is written, 1987 will appear as a banner year in the UFO chronology. It was not only the year of Gary Kinder's *Light Years,* Whitley Strieber's *Communion,* and Budd Hopkins's *Intruders,* but it was also a time when the general public began to sit up and take notice and wonder whether "maybe there is something to this abduction nonsense after all." Scott Rogo's edited volume *Alien Abductions: True Cases of UFO Kidnappings,* which appeared in 1980, met with only cursory interest among the chroniclers of pseudoscience and was almost totally ignored by the media. But in 1987 both Hopkins and Strieber, in particular, were clutched to the media's bosom and warmly embraced. The two books appeared on national best-seller lists and the authors were guests on radio and television talk-shows week after week. Their tomes were reviewed in just about every magazine, newspaper, and journal in the nation, and Hopkins and Strieber were the subjects of in-depth interviews in a number of popular scientific and pseudoscientific journals. As might be expected, there is talk that *Communion,* with Strieber playing the lead role, will be made into a movie.

Toward the end of 1987 things were definitely getting out of hand. In fact, a cover article in the December 1987 *Omni* magazine suggested that literally hundreds of people have been kidnapped but are not consciously aware of it! *Omni* even included a questionnaire to help you determine whether *you* were a

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victim. Although as I write the results of *Omni*'s poll are not yet in, with this sort of open invitation and incitement you can rest assured that hundreds more abductees will turn up clamoring for the spotlight. It is well documented that one UFO sighting succeeds in triggering a dozen more.

Fortunately, early this year Klass's new book appeared. It not only successfully extinguishes most of the flames of "abduction" unreason but also meticulously combs through the ashes of the reports to expose example after example of fraud, delusion, and self-deception. Beginning with the famous (or infamous) case of Betty and Barney Hill's 1961 encounter with a flying saucer, Klass shows in step-by-step fashion how this elaborate fantasy game came about and how, with the help of John Fuller's book *Interrupted Journey*, it became a *cause célèbre*. Even more help was forthcoming from the NBC prime-time movie "The UFO Incident," shown in October 1975. As one would expect, following this telecast other reports of UFO abductions quickly accumulated.

One of the most notorious was the Arizona case of Travis Walton, who was reputedly kidnapped for five days. As Klass reports, the most astounding thing about this incident was the fact that it was ever taken seriously. It should have been seen for the hoax it was from the outset. Travis's brother, Duane, was even quoted as saying about Travis: "He's not even missing. He knows where he's at, and I know where he's at." Although Travis passed one polygraph test, when Klass interviewed an unbiased polygrapher who had tested Travis earlier he found that Travis had flunked the first test miserably.

Again, as a result of the sensationalistic publicity, an Air Force sergeant named Charles Moody came forward to claim that a few months earlier he too had been kidnapped by UFOnauts who spoke perfect English but did so without moving their lips. Weeks later three Kentucky women claimed they were sucked into a giant UFO by laserlike beams. Next a young man named David Stephens was snatched up by little webb-fingered men wearing flowing black robes. Then, from a small town in California, Steve Harris and Helen White discovered that they also had been kidnapped by—in White's terms—"a blond-headed fellow with wavy hair wearing a long kind of thing that looked like a raincoat." Notably, all of these reports of abductions emerged following the use of regressive hypnosis to recover an alleged period of "missing time."

It was in the spring of 1979, however, that, in Klass's words, "the most incredible UFO-abduction story of all time" emerged in a book titled *The Andreasson Affair: The Documented Investigation of a Woman's Abduction Aboard a UFO.* Written by Raymond Fowler, the book tells how Andreasson, a Massachusetts mother of seven, was kidnapped only a few months after the Betty and Barney Hill case broke but waited seven years before going public herself. Klass shows, in a careful analysis of the regressive-hypnosis material and the other facts surrounding the case, that several parts of Andreasson's story were indisputably "pure fantasy." He concludes: "If any part of Andreasson's story is inventive fantasy, the entire incident must be suspect. . . . For me, the Andreasson case demonstrates that even a basically honest, religious person, who admits to having read UFO books and who has a vivid imagination, can easily invent a tale that credulous UFOlogists find impossible to dismiss simply as fantasy despite its bizarre details." Anyone familiar with the characteristics of fantasy-prone individuals will have little difficulty recognizing that Andreasson is a perfect example of the genre.

Klass also discusses the fascinating case of Charles Hickson and Calvin Parker of Pascagoula, Mississippi. These two are of particular significance to abduction be-

lievers because, like Walton's and some of Andreasson's memories, details of the kidnappings were recalled without the use of hypnosis. Again, careful analysis of their claims and their confused accounts indicates that both suggestion and confabulation are at work. Along with the powerful effects of the social-demand characteristics of the situation, little wonder that their story is a corker! Suggestion is such a powerful force that the usual hypnotic routine is not even necessary. The entire school of Eriksonian psychotherapy uses hypnotic suggestion via parables, metaphors, and stories with open-eyed clients. When persons like Hickson and Parker are interrogated by prestigious UFOlogists who also strongly believe in UFO abductions, it is hardly surprising that, if there was any doubt about what happened to them before the interrogation, that doubt will be removed by the time the questioning is over.

Indeed, with just a little help certain people can be made to believe just about anything. Klass reports, in detail, the experimental work of Alvin Lawson, John De Herrera, and William McCall, who early in 1977 took ordinary (UFO-free) people, hypnotized them, and told them to imagine they had been kidnapped by a UFO. They were then asked to describe the experience. The experimenters could find few differences between the stories told by their test subjects and the experiences described by Betty Hill and other claimants. Coupled with Martin Orne's warnings about the ease with which pseudo-memories are created, Klass makes very clear just how such erroneous abduction beliefs come about.

The most important and impressive chapters in the book, however, are those dealing with Budd Hopkins and the cases he discussed in his 1981 book *Missing Time* and in his more recent *Intruders: The Incredible Visitations at Copley Woods.* In analyzing some of the cases Hopkins regards as irrefutable, Klass has little difficulty in finding their Achilles heel. In the case of Steve Kilburn (a pseudonym) and Kathie Davis, Klass shows that Kilburn's kidnapping was wholly in Hopkins's mind, since even under hypnosis Kilburn did not recall being kidnapped. In the Kathie Davis case, even though physical evidence is claimed, Klass's detective work shows that the physical manifestations were due to natural rather than unnatural causes.

Klass's most valuable contributions to our knowledge of human frailty and credulity are found in his chapter "Many Dreams, Many Abductions." Described here are a number of individuals undergoing vivid hypnopompic or hypnogogic dreams—or acting out highly realistic fantasies—who, after encountering true UFO believers, are easily brainwashed into believing they were indeed kidnapped and violated. In a startling quotation from Hopkins's book, a hypnotized subject tells of his abduction and rape and then asks Hopkins: "It was a dream, wasn't it Budd? It had to be a dream. . . . This can't be real, can it?" Hopkins says that he reassured the subject that it was only a dream, but amazingly he then adds, "As I spoke there were tears in my eyes *because we both knew the truth*" (Klass's emphasis). Then come these chilling words from Hopkins, *"Every single abductee I've ever worked with is sure that it may happen again."* After this revelation Klass states the theme and purpose of his book:

> How tragic for those who have sought counsel from a person with no training in psychotherapy who admits that he has shifted his emphasis to "therapeutic considerations—helping the abductee deal with fear and uncertainty." In my opinion that fear and uncertainty is the completely unnecessary product of Hopkins's own UFO fantasies, which he unwittingly implants in his subjects' minds. When subjects are under hypnosis

> and thus in an extremely suggestible state of mind, pseudo-memories unwittingly implanted can last a lifetime.

It is tragic that Hopkins and his sort do not understand *iatrogenic* disorders—disorders caused by doctors and their treatment techniques and procedures, which may, although unwittingly, cause problems more serious than those that brought the patient in.

In later chapters Klass deals with Whitley Strieber and his "communion" with little folk from a parallel dimension. Strieber, of course, is a fascinating individual with a fantasy-prone personality profile who also appears to have some of the symptoms of temporal-lobe epilepsy.

In the most amusing chapter in his book, Klass discusses the rivalry between Hopkins and Strieber in claiming the limelight. Then he tells of the time he approached Hopkins with an "absurd" (Hopkins's word) suggestion: "Why don't you report these alleged abductions to the FBI?"—a brilliant strategic move. Hopkins rejected this outright and later stated: "This is the bizarre Phil Klass thing. . . . Nobody is going to report this to the FBI. It's like trying to report it to the EPA. It's totally irrelevant. . . . I think Klass is a despicable human being because he's trying to discredit the witnesses." Not at all. Klass has offered to pay any "victim" $10,000 "providing the alleged abduction is reported to the Federal Bureau of Investigation and the FBI investigation confirms that the kidnapping really occurred." Klass's announcement also noted, however, that "anyone who knowingly reports a spurious kidnapping to the FBI is vulnerable to a $10,000 fine and five years in prison."

In the final chapters of the book Klass provides the most interesting and, at the same time, the most disturbing conclusions about the present state of UFOlogy, abduction believers, UFO investigators, psychology, and scientific communication. Painful as it is to have to admit, psychologists and psychiatrists have done an embarrassingly bad job in communicating their knowledge to the general public and even to the members of their own professions. The reasons for this are many and various; books could be written about the results of narrow specialization, the proliferation of journals and papers that no one has the time to read because he is too busy producing his own, and so on. But another major contributor to the problem is the public's tendency to overrate the knowledge of the so-called experts. Most modern scientists are highly specialized and may not be aware of every development in their highly diverse and complex field of practice. And certainly no field of science is more complex and variegated than psychology and psychiatry. Too many practitioners become so narrow and so specialized they often do not know what is, literally, going on next door. Moreover, they much too frequently pronounce and declaim outside their areas of expertise. Klass cites an example of this latter problem in discussing the work of David Jacobs, a professor of history at Temple University who uses hypnosis with alleged abductees. Jacobs, in a talk given at the 1986 Mutual UFO Network conference, weighed the prosaic explanations offered for "abductee" stories and promptly rejected them, concluding his talk with the observation:

> If the abductee stories are not true and the claimants are neither lying nor pathologically disturbed . . . psychiatry, psychology and psychoanalysis are revolutionized.

Only someone unaware of the entire area of anomalistic psychology—the prevalence of fantasy-prone personalities, the powerful demand characteristics of the hypnosis situation, the impossibility of separating confabulation from truth in regressive

hypnosis, the ease of implanting false and pseudo-memories, and the universality of hypnopompic and hypnogogic hallucinations—would make such an absurd statement.

For a denouement, Klass suggests that victims of the abduction fantasy—whose initial confusions and fantasies have been magnified into full-blown abductions—should all be considered as suffering from "Hopkins Syndrome." In Klass's words: "While Hopkins was not the first to discover 'covert UFO abductions,' in my opinion he has become the 'Typhoid Mary' of this tragic malaise. Perhaps, without realizing it, he also has become one of its victims." We heartily agree and commend Klass's efforts.

In a postscript, Klass urges all potential UFO abductees to remember that "even those UFOlogists who believe that some UFOs are extraterrestrial spaceships admit that more than 90 percent of all UFO reports turn out to have prosaic explanations." He also notes that after more than 21 years of investigating the most seemingly inexplicable UFO cases he has yet to encounter even one that could not be explained in natural terms.

This brings to mind my favorite UFO story. Seems that early one winter morning a man rushed into the sheriff's office to report that he had seen a large yellow object on the ground, with flashing red lights, rows of lighted windows, and small people inside. The object was a school bus! Although *UFO-Abductions: A Dangerous Game* may not be the final word in the battle of science versus pseudoscience, Klass nevertheless has succeeded in delivering a powerful and telling blow against those fictional aliens, their human accomplices, and the ever-present forces of illogic and unreason. •

The Exploitation of the Public Interest

The UFO Phenomenon. By the Editors of Time-Life Books. *Mysteries of the Unknown* Series. Time-Life Books, Alexandria, Va., 1987. 160 pp. $12.99

Michael R. Dennett

THE SLICK advertising brochure received by millions of Americans promoting Time-Life's new *Mysteries of the Unknown* series promises that it is unprecedented, irresistible, and astounding. *The UFO Phenomenon,* third in the series, is none of these. Instead it is a brazenly pro-UFO book put together by hack writers. The paranormal bias aside, the book reflects the poorest writing quality. The text is peppered with vague phrases like "some intelligence officers," "some researchers," "serious UFO investigators," "some local commentators," "a civilian investigator," and "some ufologists." The reader never learns who the intelligence officers might have been or who, in the opinion of Time-Life, the serious UFO investigators are.

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There is no indication that *any* primary research was done by the authors, nor does the book contribute any new or original ideas on the topic. No attempt is made to make an assessment of the overall phenomenon on the basis of either the quality or the quantity of UFO reports. The focus jumps from one case to the next and then often back again, much like a low-budget television "documentary."

A few UFO cases are reviewed skeptically but many are presented just as they first appeared in the *National Enquirer*. Among the many cases for which the authors provide no skeptical data are the Travis Walton abduction (see Wells 1981) and the Pascagoula, Mississippi, case (see Klass 1974, Chap. 27). Although there is ample evidence that both of these cases are hoaxes, Time-Life presents them as true mysteries.

Perhaps the most blatant example of omitting the prosaic explanation of a UFO event is in the recounting of the encounter of an Air Force RB-47 aircraft with a radar UFO in 1957. No mention is made of the brilliant investigation of this case by Philip J. Klass. Yet in writing about radar evidence Time-Life states: "A number of radar-tracked UFO episodes remain unexplained—at least to the satisfaction of those who tracked them." Because the RB-47 incident is one of the few radar cases mentioned, the reader is drawn to the conclusion that it must be unexplained, at least to "those who tracked them." The truth is quite different. The report of the investigation by Klass not only provided a solution but one that was able to satisfy both the aircraft's pilot and its radar operator. After reviewing the data presented by Klass, radar operator Frank McClure wrote: "I am certain that for some reason we had intercepted a ground signal that moved up-scope. . . . I do not believe any UFO was emitting these signals" (Klass 1974, p. 211).

Other important facets of the flying-saucer phenomenon covered by the authors include the ideas of Erich von Däniken and the design of a "viable" UFO based on the description of Ezekiel's wheel in the Bible. A page is devoted to "the Oz factor," the supposed feeling of "sensory isolation" experienced during close encounters with UFOs. Wilhelm Reich and orgone energy are mentioned. Even the tale of Antonio Villas Boas's abduction and seduction by a beautiful spacewoman is told. Subsequent medical examinations, report Time-Life, showed unusual wounds on Villas Boas, which "led some researchers to study the case seriously."

The UFO Phenomenon is, more than anything, a picture book. Of the 152 pictures, drawings, and photographs, only three were of passing interest to me. A couple of the more than 200 UFO photos taken by Eduard "Billy" Meier are featured in color. Almost 10 percent are artists' renditions of space aliens and abductions, seven are motion-picture stills from films like *E.T.*, and a baker's dozen, 9 percent, are stylized artwork of no value.

Time-Life has produced the standard fare used by other publishers to cash in on the public interest in flying saucers. Not surprisingly, the contributors to *The UFO Phenomenon* seem unaware of the impact on our society of hundreds, perhaps thousands, of pro-UFO books, many of them heavily promoted by major publishing houses, It is clear from reading Time-Life's book and many others like it that flying-saucer tales are too lucrative for the publishing industry to ignore and that writers with little talent will continue to exploit the public's gullibility.

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The Influences of Nineteenth-Century Pseudoscience

Pseudo-Science and Society in Nineteenth-Century America. Edited by Arthur Wrobel. University Press of Kentucky, Lexington, Ky., 1987. 245 pp. Cloth, $24.00.

Gordon Stein

HOW OFTEN the pseudoscience of one century comes back to haunt us again in the next in a slightly different format! The old idea that pseudoscience can turn into acceptable science in a later period is rarely true. An individual idea (e.g., plate tectonics) may come to be accepted eventually, but this rarely occurs with entire fields of study. *Pseudo-Science and Society in the Nineteenth Century* consists of nine individually authored chapters, each on a different type of pseudoscience, with an Introduction and an Afterword by the volume's editor, Arthur Wrobel.

The first chapter treats both the discovery of anesthesia and the claims of phrenology and mesmerism. This peculiar combination occurs because Robert Collyer, the man who was perhaps the real discoverer of surgical anesthesia, was a pseudoscientist and a sometime phrenomagnetist. The distinction between the approach of pseudoscientists and that of real scientists is often blurred, the author claims. He rightly points out that real scientists often confuse science with technology, rushing every new scientific truth into technological application before we have thoroughly understood it. This, it is claimed, is *our* pseudoscience. Perhaps it is.

We learn in the next chapter about the more or less harmless "water cure"—or "hydropathy," as it was more commonly known. Then spiritualism, as personified in Andrew Jackson Davis, comes in for a quick review. It had a number of "faith healing" similarities, but it, too, did a lot less harm than some of the other fads.

The quack has had a field day with the subject of sex throughout history, and the nineteenth century was no exception. Sex is such a powerful and important drive, and yet is so easily thrown out of proper function, that it is ready-made for worthless get-rich-quick schemes. The situation was compounded in the last century both by a lack of facts about sexual function in the medical profession itself and by the presence of many diploma-mill medical schools that gave their graduates little substantive training in medicine.

Eugenics had also become popular in the medical field. Sex was animalistic, but many felt it could be used to improve the human race if only it were harnessed as it had been in animal breeding—but with ethical and moral constraints. Sex was considered a path by which social reform could be accomplished. You could put this theory into action by knowing your ancestors and their traits and making sure that your spouse did not have any of the same "weak" traits you did. In that way, superior children could be produced. Intrinsic to accomplishing this was the conservation of the vital forces in the semen for times when pregnancy was likely to occur. Infrequent but vigorous intercourse at fertile periods was the rule. How much effect this actually had in producing superior children, we are never likely to know; but it probably produced some less-than-satisfied adults.

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Perhaps one of the most influential pseudosciences in the nineteenth century was homeopathy. This was the treatment of the patient with highly diluted doses of a medicine that produced the same symptoms as those being treated. Along with mesmerism, homeopathy was widely accepted and almost made the grade as "real" science. Mesmerism, of course, lingers on today in the form of the related treatment called hypnosis. How closely one affected the other can plainly be seen from the chapter on mesmerism.

Wrobel's concluding Afterword sums up the influence that these pseudosciences have had upon twentieth-century scientific and unscientific thought. The remains of many of them are still with us, even within such legitimate sciences as psychology and anthropology. This book gives us a valuable historical perspective on much of our present-day thinking. •

Lines of Conjecture

Lines to the Mountain Gods: Nazca and the Mysteries of Peru. By Evan Hadingham. Random House, New York, 1987. 307 pp. Cloth, $22.50.

Michael R. Dennett

LINES to the Mountain Gods is an excellent example of what a popular-science book should be: factual, informative, and entertaining. It is also extensively researched and shows considerable attention to detail. The author, Evan Hadingham, creates a broad overview of ancient Peruvian culture by examining, in short, interesting chapters, many aspects of Peru past and Peru present. The result is a believable surmise as to what the Nazca lines and other ancient remains are all about.

Hadingham is not at all impressed by Erich von Däniken's ideas that Nazca was an ancient spaceport for extraterrestrial visitors. He considers von Däniken's views totally untenable on scientific grounds. Writes Hadingham: "[It is not] obvious how the markings could have been used as landing strips, despite the superficial resemblance of the trapezoids and triangles to airport runways. In many parts of the pampa, the surface is so soft that any vehicle without four-wheel drive soon becomes stuck in the sand. Anything more substantial than the smallest light aircraft could attempt a landing only at severe risk."

About von Däniken's veracity the author correctly points out, with some understatement, that "substantial items of evidence [in von Däniken's books] are now known to have been completely fabricated." He summarizes: By taking a "glance at photos of some of the more complex interconnected figures, it should be obvious that von Däniken's fairy tale is wholly inadequate to account for them."

On other ideas about the lines the author is equally skeptical. He writes that one of the "more superficially appealing ideas is that the line builders actually succeeded in flying over their designs." While it might theoretically be possible that hot-air balloons were made by the people of Nazca, Hadingham doubts it. Few successful balloon flights have ever been made over the pampa at Nazca, and the only one

made from material available to ancient Peruvians lasted only two minutes. Such flights would have required huge fires to inflate the hot-air balloon(s) and no "evidence of substantial fires has ever been recorded by surveyors or archaeologists."

But why were the lines made?

In one of his concluding statements about the people of ancient Peru, Hadingham writes that it "seems likely that mountain deities would have been the most prominent among a whole range of other venerated forces in their surroundings." And therefore the people of Nazca drew lines as "signals or acts of piety directed to the mountain spirits of the Andes."

Lines looks at ancient Peru in detail. Other mysteries examined include the ruins of Cahuachi and the Trident of Paracus. Perhaps the most amazing artifacts of ancient Peru are the remnants of the La Cumbre water system. Stone aqueducts, some as much as 70 feet high, can still be found snaking along the base of the Andes. "Designed to transport water some fifty miles . . . La Cumbre is thought to have absorbed two centuries of construction and a labor investment perhaps ten times that devoted to Egypt's Great Pyramid."

At times the author seems to move too far from the ancient ruins of Peru and into modern times, and he does not tie some of his topics together until the end of the book. But these are minor points and overall it is a wonderful book packed with science and history. The text is bolstered by 200 photographs, illustrations, and maps. For someone interested in any aspect of Peru, or in the Nazca lines, this book is a must. •

Nessie Without Sensationalism

The Loch Ness Monster: The Evidence. By Steuart Campbell. Aquarian Press, Wellingborough, North Hamptonshire, U.K., 1986. (Distributed in the U.S. by Sterling Publishing Co., Two Park Ave., New York, NY 10016.) 126 pp. Paper, £3.99.

George A. Agogino

THIS LATEST book on Nessie, the elusive and perhaps mythical creature that is believed to inhabit Loch Ness, has been written by Steuart Campbell, an Edinburgh writer and investigator. Unlike most previous books, which mixed folklore with possible fact, Campbell's is based on logic and reason rather than on sensational stories with little foundation.

Also unlike previous publications, which generally mirrored and often exaggerated Nessie reports, this book looks realistically at the evidence. Eyewitness accounts, photographs, movie strips, and sonar and radar scans are examined with the approach of a scientist. The result may disappoint Nessie buffs, but the books is based

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on substantiated fact and shows that there is no concrete evidence that Nessie ever existed. This type of book will not sell as well as one that sensationalizes rumor and half-truth regarding this "creature of the lake," but it is obviously not published for the writer's popularity; it is his search for truth. I respect him for his approach and for his conclusions.

Most books about Loch Ness start with the reported sighting of a "lake monster" in A.D. 665, when Saint Columba reportedly stopped it from devouring an unfortunate by evoking the name of the Lord. Steuart Campbell, while he mentions this incident, had refused to investigate any reports of sightings earlier than 1933, believing that such accounts could not be relied upon with any degree of accuracy.

However, although he dismisses these earlier reports, Campbell does return to the past to discuss the Kelpie, a water mammal generally resembling a horse or a cow that has been part of the folklore of Scotland for centuries. On calm days, pools and lakes reflect on their surfaces the trees and bushes of the shoreline and the clouds in the sky. It was easy for the Scottish Highlanders of past centuries to see another world, a duplicated world, similar to the real world, existing beneath the waters. The images of horses, cows, and deer coming to drink were reflected in the water and probably were the basis of the Kelpie legend. It was a simple step from this position to accept Nessie, the "monster of the Loch."

Campbell points out that the frequent sightings of the "creature of the lake" on the surface of the water suggests it is an air-breathing mammal or reptile. With this logic, one would expect that we would have clear photographs or movie strips of Nessie, since a road circles the lake and tourists abound with a variety of cameras. Yet no acceptable, clear shot has ever been taken of Nessie. Neither have its footprints coming from the lake ever been found, as reported in many accounts. It is this lack of clear evidence that detracts from the claims of those who strongly believe in Nessie. From my own standpoint, Nessie could not be a reptile, for the waters of the lake approach the freezing point much of the year. No reptile, unless it has developed some degree of warm-bloodedness, could possibly exist under these circumstances. Nor is the existence of the often-reported "sea cave" logical, for Loch Ness is considerably higher than sea level. If there were an unknown underground outlet to the sea, it would have drained the the lake to sea level.

After examination of all of the visual sightings, as well as photographic evidence, nothing concrete has ever been presented for science to examine. Most of these sightings, or photographs taken from a distance that show a snakelike neck and head cutting the surface of the lake, are simply the result of boat wakes. It is interesting that most of these sightings occurred on days when the lake was calm and boat wakes more pronounced. Many sightings can be clearly correlated to a local ice-

breaker that operates on the lake, since this boat leaves a pronounced wake during operation. In many of the photographs, the dark wake believed to be the "monster" is seen to be accompanied by smaller wakes when the film is enhanced. Inanimate objects, like long-submerged logs and decaying vegetation-mat, brought to the surface by gases formed by their disintegration, if properly combined, would clearly from a distance look like a head and neck—represented by the log—supported by a "body" of floating vegetation. Common animals of the area can also distort perception, especially during a search for Nessie. Geese swimming in a line in the distance might appear to be a multi-humped creature resembling something from the prehistoric past. Deer, horses, seals, and otters have all been known to swim in the lake and, at a distance or at dusk, could be gestalted into Nessie.

Author Campbell recognizes that individuals observing an event are not always accurate in recalling what they have seen. The phenomena of "sharpening" (seeing more than is there) and "leveling" (forgetting important details after a short period) must be taken into account in any investigation. Many individuals will also lie for publicity, financial gain, or simply for psychological satisfaction. Several people who have reported sighting Nessie are known "tricksters" or "practical jokers."

Dishonesty has also been attributed to some who claim to have "captured Nessie" on film. There exists no picture that clearly shows that there is really an unknown creature in Loch Ness. Perhaps the best are the Dinsdale photographs. The resulting 16-mm film when analyzed showed nothing concrete; the image may have been only a pronounced wake from a boat. Even Dinsdale was disappointed with the developed pictures. It is even possible that he simply photographed an otter, for he indicated white markings on the throat and cheeks of the "monster," a normal characteristic of the lake otters. Several photographs, seemingly of an unusual head appearing above the waters of the lake, are believed to show the tail of an otter in the act of diving for fish. Underwater photographs have little potential, because the lake is murky and, even with lights, visibility below the surface is limited. Even if a camera were to have a close encounter with Nessie, only a part of the creature would be captured on film because there simply are no lights available that would enable the entire creature to be photographed if it had any size at all.

Sonar and radar seem to have the best potential. However, it has turned out that this evidence, at first suspected of being convincing, was poorly interpreted, and today there is no sonar evidence that Nessie exists. Radar has been a failure as well. It is admitted that hydrophones have picked up strange sounds at times, but it is suspected these are of mechanical origin. No echo signals, such as a creature might need to guide his movements in this murky water, have ever been recorded. In fact, in conclusion the author feels sure that Nessie, or as he calls it, "N," does not exist in Loch Ness. He even goes so far as to claim the nonexistence of other lake monsters reported throughout the world.

At this point I must mention my own experience with a "monster" in Lake Senteni, New Guinea. I was placed on detached service during World War II for sensitive work with the natives in this area. I used a dugout to visit islands in this lake, and listened to the natives' tales of "monsters" there. I didn't believe them, but one day while using hand grenades to kill fish for the natives, I surprisingly stunned a bull shark. The incident was later reported by Bernard Heuvelmans, using my information, in a paper published in a French magazine. This was believed at the time to be the second purported occurrence of sharks in a fresh-water lake cut off from the sea. Later, other investigators found swordfish in the same lake and bull sharks in nearby Lake Jall. In this case, the lakes are almost at sea level and close to

the ocean, and during the rainy season they spill over into riverlets that flow to the sea. It is suspected that during these periods, smallfry of these fish left the ocean for the relative protection of the lakes, adjusted to the fresh water, and eventually grew too large to return to the sea. I mention this since it is another example of "lake monsters" that have a logical origin and, while somewhat out of place, are known fish in an unusual habitat.

In conclusion, Campbell's *Loch Ness Monster: The Evidence* is perhaps the best book yet presented on the "creature of Loch Ness," for it disregards hearsay evidence and folklore and demands concrete proof before the claim of "Nessie" is accepted by science. •

Some Recent Books

Hines, Terence. *Pseudoscience and the Paranormal: A Critical Examination of the Evidence.* Prometheus Books, Buffalo, N.Y., 1988. 372 pp. $19.95, paper. Intended as a text and reference volume for a course on parapsychology and the occult, this valuable volume fulfills that goal admirably, but is more than that. It is a readable, up-to-date (some of the references are to 1988 publications), and carefully prepared synthesis of the latest scientific/psychological studies and perspectives on virtually every topic of interest to observers of paranormal claims and of fringe-science and pseudoscience. Especially agreeable is the emphasis throughout on marshaling the latest knowledge of psychology to help readers understand how unusual-seeming experiences can be misinterpreted as evidence of paranormal events. Should be on the bookshelf of every skeptic and scientist interested in these subjects.

Strahler, Arthur N. *Science and Earth History: The Evolution/Creation Controversy.* Prometheus Books, Buffalo, N.Y., 1987. 552 pp. $39.95, hardcover. A massive work (54 chapters divided into nine sections) by a noted professor and author of earth-science texts, outlining in some detail our present knowledge about the history of the earth and assessing and contrasting the claims of creationists in light of it. The author says his mission "is primarily to explain what natural science is all about and how scientists go about doing it. The debate between creation scientists and mainstream scientists is an ideal vehicle for carrying out that mission." As an intended reference tome on the creation/evolution controversy and all related scientific and philosophical issues from an earth scientist's viewpoint, this work may be hard to top.

—*Kendrick Frazier*

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Gardner, Martin. "Psychic Astronomy." *Free Inquiry,* Winter 1987-88, pp. 26-33. A sampling of "outrageous examples" in which "religious cult leaders, seers, psychics, and spirit mediums have favored the public with exotic revelations about astronomy, especially about life on other planets."

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"Low Back Pain: What About Chiropractors?" *Harvard Medical School Health Letter,* January 1988, p. 1. Discussion of the pros and cons of chiropractic.

Seckel, Al. "Sensing How to Help the Police." *Los Angeles Times,* November 16, 1987. Investigation of claims that psychics have helped the police. It's not true in the case of the Los Angeles Police Department. "The LAPD has not employed psychics in criminal investigation," Seckel quotes Martin Reiser, director of LAPD's Behavioral Science Services. "In several publicized cases where individuals who claimed psychic powers volunteered information about the crime, the information has not proven useful." Says Dan Cooke, public relations head of the department: "The LAPD has not, does not and will not use psychics in the investigation of crimes, period. If a psychic offers free information to us over the phone, we will listen to them politely, but we do not take them seriously. It is a waste of time."

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Watson, Andrew. "Trouble With Numbers." *New Scientist,* January 21, 1988, pp. 66-67. An amusing look at some horoscopic predictions from a popular woman's magazine in Australia, seeing what happens when one multiplies certain expectations ("In January, a debonair European helps you pass the summer nights") by the 208 million women in the world, or at least the 670,000 women in Australia, who were born under each sign.

—*Kendrick Frazier*

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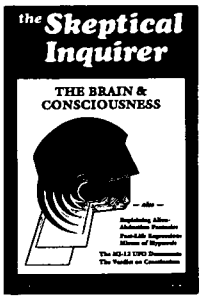

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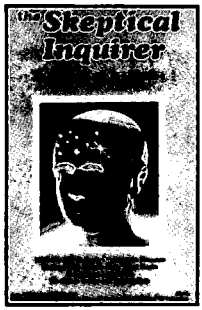

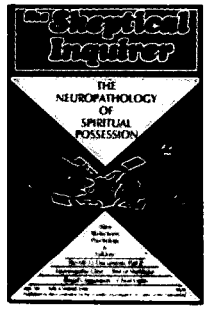

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From Our Readers

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Hypnogogic hallucinations

I would like to thank Robert A. Baker for his article "The Aliens Among Us: Hypnotic Regression Revisited" (*SI*, Winter 1987-88). I have been plagued by hypnogogic hallucinations since childhood, but until reading this article I didn't know what they were called or even that other people had them.

My typical hallucination goes something like this: I am on the verge of falling asleep. A loud ringing in my ears, sometimes accompanied by a montage of unearthly voices, signals the onset of another episode. Though I seem awake, my body is completely paralyzed. I feel my "spirit" leave my body. The next thing I know I am floating somewhere near the ceiling, looking down at myself and my wife at my side. Once free of my body, I can often control where my ethereal self goes. Sometimes I float all around the house, and on one occasion I floated through the wall and out into the yard. Occasionally I sense the presence of other beings around me. At some point I get bored or frightened by the whole thing and return to my body and go to sleep.

Instead of an out-of-body experience, I sometimes have an extremely vivid auditory and/or visual hallucination. Over the years I have seen and talked to "ghosts," been visited (though not yet abducted) by aliens, seen three-dimensional heads floating by my bed, heard knocks on my door (when no one else was in the house), and was once attacked by a glowing green Doberman. These experiences seem as real as life.

I have never thought of these experiences as anything more than what they certainly are: my mind playing tricks on itself. The few other people I've known who have had similar experiences were all convinced that they were, in Baker's words, "incontrovertible proof of some sort of objective or consensual reality." These otherwise rational and intelligent people also believe that Uri Geller can really bend spoons with his mind. Take one hypnogogic hallucination and one fantasy-prone individual and you have all the ingredients you need for a true believer.

Based on my own experience, I believe that hypnogogic and hypnopompic hallucinations provide a rational explanation for most alien abductions, out-of-body and near-death experiences, ghosts, and just about any other claim of the paranormal you care to name. Baker states that these hallucinations are a "common yet little publicized and rarely discussed phenomenon." I recommend that *SI* and CSICOP discuss and publicize them thoroughly in the future.

James A. Stewart
Coronado, Calif.

I was quite interested in the article by Robert A. Baker describing hypnopompic phenomena. It brought to mind an experience I had several years ago while traveling in Asia. I was sleeping in a small

hotel in the hills of Sri Lanka and was awakened by a dark and heavy form lying on top of me. I found myself pinned down and unable to move. I said to the apparition, "You are a creation of my mind," whereupon the apparition replied, "No, I'm not." By making a considerable effort I was able to begin moving my arms. The figure began to dissolve, and simultaneously movement became easier. Then, strange to say, I went back to sleep. In a few minutes the experience was repeated, exactly as before, except this time at the end I remained awake.

It still seems as real to me as any of my experiences in the waking state. I had never had a similar one and have not since.

I now recognize this as a typical hypnopompic experience. I had never heard of such a thing before reading this article, which helps to shed some light on a still mysterious and easily misinterpreted experience. Thank you.

Howard Wallace
Orting, Wash.

"The Aliens Among Us," by Robert Baker, was fascinating to me, especially since I could recognize myself in Baker's description of a fantasy-prone personality. My only disagreement is with the characterization of hypnopompic experiences as being entirely convincing, since I long ago learned to recognize and control all my hallucinations, dreams, hypnogogic and hypnopompic experiences, and to enjoy them or shut them off, using reality testing. I thought it might be useful to bring the mechanisms of recognition and control to public attention, since I have seen little (aside from current dream research) to indicate that there is work going on in this area.

I think the need for control came about because many of my fantasy experiences (under which term I will lump all the above types) were frightening to me as a child. Gradually I came to apply a set of tests to my experiences, using my mind and sensorium, and applied control techniques when I had determined the nature of the experience. The control techniques themselves served as a test. If they worked, it was fantasy. (My tests have always been conclusive, and I have never attempted to use fantasy controls on real situations, however tempting some outlandish situations are.) The hardest to control was the hypnopompic experience, because of the panic paralysis brings. At first, I struggled for several minutes each time, attempting to wake up. When I finally learned that the experiences usually included a personal intrusion of some sort—there wasn't really anyone in my room—and that it wasn't dangerous to stay in the fantasy, I learned to control and enjoy it.

The first giveaway of fantasy experiences is that for me they are always superimposed on an underlying layer of familiar and continuous events. Mentally I "pick up" the layer of fantasy experience and "look under" it. If the underlying experience is lying in bed or standing in line, or something else more familiar than the fantasy, I know instantly what's going on. The "picking up" is really a search for another, simultaneous experience. I can see through waking hallucinations if they are "eyes open"; if they are "eyes closed," opening my eyes dispels them. There is always another simultaneous experience that I can access, which is different from invoked memories. I apply sensory tests to the experiences I find, and the whole process has become so fast I now have to analyze carefully to see what I should do.

Sensory tests show that in fantasy experiences colors appear washed out compared to the "real world." Sounds are hollow and have no locational source. Touch is inoperative (pinching myself is impossible, since I cannot experience pain), and I find I cannot actually make a sound that reaches my ears. "Reading" is not an eyes-to-mind experience, but one where meaning instantly reaches understanding. I compared my tests with the experiences of another dreamer the other night and found she agreed with my characterizations of the sensory lacks of fantasy.

Next I attempt to control the experience. When this works I know I'm daydreaming or having a hypnogogic, hyp-

nopompic or hallucinatory experience. I've never been completely successful controlling any of these experiences. Sometimes I simply have to shut them off.

I think the "fantasy-prone" or FP personality is valuable, because how else could one have compassion except by vividly imagining oneself in another's "shoes," how else plan for the future if not by imagining the consequences of one's actions? Writing stories, plays, poems is child's play, a continuous activity that one has to learn to shut off rather than turn on. A vivid imagination is extremely useful—as long as one learns to recognize its activity and control it.

A.L. in San Jose
(Name withheld by request.)

In Robert Baker's otherwise interesting article, I was dismayed to note the following statement: "On the national scene today too many lives have been negatively affected and even ruined by well-meaning but tragically misdirected reformers who believe the fantasies of children, the alienated, and the fantasy-prone personality types and have charged innocent people with rape, child molestation, assault, and other sorts of abusive crime."

Even while admitting that such cases do occasionally come along, the implication of the foregoing statement is that there is a fanatic movement afoot that will result in individuals being falsely accused of child abuse. Such an implication is both unsupported and reprehensible.

Stewart David Greenlee
Attorney and Counselor
Fort Worth, Texas

I wish I was a fantasy-prone personality with a creative memory who confuses fact with fiction and reports fantasized events as actual occurrences. Oh how I wish I had a propensity for hallucinations, both hypnogogic and hypnopompic. Then I could write a best-selling nonfiction book and make a million bucks. Maybe even three million. Five million? Hey, maybe I *am* fantasy-prone.

Bonnie Tomikel
Corry, Pa.

Alien tales not SF

This is a protest in good humor. Robert A. Baker wrote an excellent piece on the alien-abduction phenomenon (*SI*, Winter 1987-88). I found only one objectionable bit—he suggested moving the latest batch of abduction books from the nonfiction racks and sticking them in science fiction "where they belong."

Please—they don't belong to us, either. In your list of CSICOP Fellows I see both Isaac Asimov and L. Sprague de Camp. Ask either of them and you will discover that most science-fiction writers are on your side of the issues. We don't like or agree with Strieber or Hopkins.

While I understand that it is common practice to burden science fiction with partial responsibility (or blame, as you will) for spurring a lot of pseudoscience, that doesn't make it a correct assignation. Most SF writers are rationalists to the core and work very hard to pass this on in their stories—which are, first and foremost, stories, clearly labeled and marketed as such. As a sample, though, may I suggest reading James P. Hogan's *Code of the Lifemaker* to see what I mean. There are some wonderful passages in this book about pseudoscience and the nature of charlatans.

Hopkins and Strieber have not even told good stories. Most science-fiction editors would reject their books as too illogical, poorly developed, and simply "old hat."

As a favor to everyone, please don't lump science fiction and pseudosciences together. They are antithetical to each other. Perhaps if more people read science fiction they would not be so quickly fooled by the Hopkinses of the world.

Mark W. Tiedemann
St. Louis, Mo.

What reflex is it that causes otherwise sensible scientists to label egregious instances of pseudoscience as "science fiction"? Science fiction is not synonymous with nonsense; on the contrary, the best SF is deeply rooted in good science and good sense. Examples include CSICOP Fellow Carl Sagan's best-selling novel *Contact*. Why defame such excellent works, as Robert A. Baker does in his recent article on "The Aliens Among Us," by lumping them together with tales of UFO abduction and past-life regression?

Science fiction neither needs nor wants this nonsense. Let's leave it on the "Occult" shelf where it belongs, and stop insulting the honest practitioners of intelligent SF.

Gregory Kusnick
Sonora, Calif.

Biochemistry and rapture

In James Alcock's review of Paul Kurtz's *The Transcendental Temptation* (*SI*, Winter 1987-88). I was particularly struck by Kurtz's speculation regarding a biochemical basis for religious conversion. Sigmund Freud is alleged to have said that in the last analysis the entire field of psychology may reduce to biological electrochemistry.

A tremendous amount of work is now being done around the world on brain chemistry, especially as it relates to the emotional life of the individual. One extremely fruitful line of research has to do with the interaction between drugs, especially the morphine derivatives, and serotonin, which seems to act as a built-in way of allowing the individual to "feel good." The opiates seem to have a similar effect, and the body being lazy soon learns to let the addict get his highs from drugs and shuts down production. The agony of withdrawal of course comes from the fact that when the drug is withdrawn it takes the body a long time to get back in production of serotonin and other intrinsic mood-control biochemicals.

It strikes me that here may be a clue to the rapture reported by mystics and people who have undergone a Pentecostal-type religious conversion. If the hearing of "good news" and the assurance that there is a way out of the misery, agony, and frustration of everyday life should prove to result in a spate of mood-controlling chemicals with much the same "high" as experienced by drug users, then Freud and Kurtz may be right. While I suspect that it would be difficult if not impossible to obtain before-and-after blood samples of people undergoing conversion at some evangelical crusade or listening to one or another radio or TV evangelist, it might be possible to test the hypothesis by enlisting the aid of college students when they get their final grades. If a correlation could be found between the receiving of unexpected grades—good or bad—and the level of brain chemicals, then it might be worthwhile speculating about the relation between brain chemistry and the rapture of religious experience. Perhaps we may come to see religious conversion, especially when repeated over and over, as a sort of addiction.

Charles E. Gleason
Perrysburg, N.Y.

Root of anti-Semitism?

It is with great dismay that I read in your magazine a passage as full of irrationality as are UFOs or astrology, quoted both from a skeptical book and by a skeptical reviewer as "fact." It proves to me that we all have irrational prejudices and we must also scrutinize our own works for them.

In James E. Alcock's review of Paul Kurtz's book *Transcendental Temptation* the irrationality that the Jews' belief in their own election [as God's chosen people] is a root cause of anti-Semitism appears as a *fact*. Anyone who has done scientific research into the causes of anti-Semitism and racism knows that "blaming the victim" is a standard part of apologist rhetoric sometimes even believed by the victim.

"Scientific" anti-Semitism was an essential part of the program that allowed

Hitler to justify the killing of some six million Jews. Without the backing of the rationalist, skeptical German scientific community his task would have been more difficult.

I would hope, as a Jew and a skeptic, that the rest of the skeptical community will take this as a reminder that saying you are a skeptic and a rationalist does not make you one, universally, in all areas. If skepticism and rational thought were that easy there would be no need to promote it.

Eric Mendelsohn
Professor of Mathematics
and Computer Science
University of Toronto
Toronto, Canada

Paul Kurtz responds:

As James Alcock clearly stated in his review, my point was that the defining *of a social or ethnic group by means of religion can lead to tragedy, especially if the group being so defined is a minority. I used the persecution of the Jews as an example, but neither the reviewer nor I suggested—or stated as a "fact"—that the Jews are the "cause of anti-Semitism." The key point of my chapter on Moses is that his alleged revelations and miracles and the concept of the "chosen people" are, in my judgment, pure myths. No doubt they have helped sustain the Jewish people throughout history, but they lack any empirical corroboration.*

MJ-12 papers

I do not need to read the second half of the Philip J. Klass article that began in the Winter 1987-88 *SI* to convince me that the MJ-12 documents are fraudulent. Much of my 22-year career in the U.S. Navy was in communications and the handling of classified documents. Things other than the incorrect dating of the documents caught my attention.

To the best of my knowledge the term "Eyes Only" was originated by the British and was not used on U.S. documents unless they were to be shared with the British. I never saw the classification "Top Secret Restricted Security Information." The term "Top Secret" covers all bases. Standard practice calls for the classification of a document to be stamped in large red letters at the top and bottom of all pages of a classified document, as shown in the supposed copy of the memo from Truman to Forrestal.

R. L. Kile
San Jose, Calif.

Dingwall's legacy

How very interesting to read Lys Ann Shore's News and Comment piece about the books of Eric J. Dingwall (*SI*, Winter 1987-88), who spent nearly all this century involved in psychical research. He became involved in the subject as early as 1906, and his reminiscences in the *Parapsychology Review* of Sept.-Oct. 1975 are of great interest. He wrote in 1930 (*Psyche* magazine), "Thus it may be said that the whole field of study is overrun with fanatics, misguided enthusiasts, pathological liars, and even lunatics who believe themselves possessed of strange powers." My book (unpublished) *The Mediumship of Stella C.* has, as a background, the story of Dingwall's love/hate relationship with Harry Price; they parted close company with the affair of Stella C. (Dorothy Stella Cranshaw). Even toward the end of his life Price was still writing untruths about Dingwall's sighting of supposed "phenomena" at a Stella C. séance.

Lys Ann Shore does not mention that Dingwall shared authorship of *The Haunting of Borley Rectory* with K. M. Goldney and Trevor H. Hall.

Dingwall's copy of Viscount Adare's *Experiences in Spiritualism with D. D. Home* . . . (1869) was sold in the sale for £340, nearly three times the estimate. The history of this book is described in Hall's *Enigma of Daniel Home* (Prometheus, 1984).

Peter Bond
Chipping Ongar
Essex, U.K.

Homeopathic medicine

Stephen Barrett's article "Homeopathy: Is It Medicine?" (*SI*, Fall 1987) neglected to mention several good double-blind studies that suggest that the microdoses that homeopaths use may indeed have biological action and clinical efficacy. In fact, I refer to more than two dozen good scientific studies in my newest book *Homeopathy: Medicine for the 21st Century* (North Atlantic Books, 1988).

Barrett mentioned the *Lancet* study which showed that the symptoms of hay fever were significantly reduced in those patients given a homeopathic medicine, as compared to those given a placebo.[1] However, Barrett did not refer to a double-blind study published in the *British Journal of Clinical Pharmacology* that showed that 82 percent of the patients with rheumatic arthritis who were given a homeopathic medicine experienced improvement in their symptoms, while only 21 percent of those given a placebo experienced a similar degree of relief.[2]

The *European Journal of Pharmacology* recently published an article showing that microdoses of *silica* stimulated macrophage activity in mice.[3] And the respected journal *Human Toxicology* published an article showing that microdoses of arsenic increased the excretion of arsenic by rats who had previously been given crude does of this mineral.[4]

In addition to these studies, medical history shows that homeopathy developed its popularity in the United States and Europe primarily because of its successes in treating various infectious epidemics that raged during the ninteenth century.[5,6] It seems unlikely that a placebo response is an adequate explanation for the successful treatment of cholera, yellow fever, typhoid fever, and the other serious infectious conditions of the nineteenth century.

Of special intrigue to skeptics of homeopathy is the fact that homeopaths determine that a medicine is effective in healing by previously conducted drug trials called "provings." These experiments subject volunteers to one or two doses a day of a homeopathic microdose in efforts to evaluate what symptoms the substance causes in continual dose. If, in fact, there is nothing there in the medicine, it is an impressive coincidence that those given *belladonna* tend to experience *belladonna* symptoms, while those given *mercurius* experience *mercurius* symptoms.

As valuable as laboratory and clinical research is and as insightful as historical evidence may be, it must be recognized that homeopathic medicine makes sense. Today, symptoms of illness are not simply thought to be random responses of the body, but adaptic efforts of the organism to stress or infection (read Claude Bernard, W. B. Cannon, Hans Selye). Since symptoms are often efforts of the organism to defend and heal itself, medicines or procedures that suppress, inhibit, or control this natural response compromise the immune and defense processes.

When one uses a conventional drug for symptomatic relief, it is no wonder that the drug does not work. It is no wonder that a rebound response is commonly experienced. It is no wonder that side effects frequently result. (Actually, from a strictly pharmacological perspective, drugs do not have "side effects"; drugs only have "effects." We have arbitrarily differentiated those effects we like from those we don't like, calling the latter "side effects.")

Explanation of the microdoses used by homeopaths requires more detail than I can provide now, but the use of small doses to have significant biological action is not new to science. We commonly recognize the impressive sense abilities of virtually every animal. No animal senses small doses of everything, only certain things vital for its survival. As astronomer Kepler once said, "Nature uses as little as possible of anything."

It is known that the "C" note of a piano is hypersensitive to the ringing of the other "C" notes. Perhaps the law of similars, which is the basis of every homeopathic prescription, is the methodological principle to finding the substance in nature from which the sick individual gets sick.

More research on methods to stimulate immune response is needed, now more than ever. Since it was the father

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of immunology himself, Dr. Emil Adolph von Behring, who said that the homeopathic principle is at the basis of immunology, it seems worthwhile for research on homeopathic medicine to be seriously considered.

Dana Ullman, M.P.H.
Oakland, Calif.

Notes

1. D. T. Reilly et al., "Is Homeopathy a Placebo Response?: Controlled Trial of Homeopathic Potency, with Pollen in Hayfever as Model," *Lancet* (October 18, 1986): 881-886.

2. R. G. Gibson et al., "Homeopahic Therapy in Rheumatoid Arthritis: Evaluation by Double-Blind Controlled Trial," *British Journal of Clinical Pharmacology*, 9 (1980): 142-147.

3. E. Davenas, B. Poitevin, and J. Benveniste, "Effect on Mouse Peritoneal Macrophages of Orally Administered Very High Dilutions of Silica." *European Journal of Pharmacology*, 135 (April 1987): 168-174.

4. J. C. Cazin et al., "A Study of the Effect of Decimal and Centesimal Dilution of Arsenic on Retention and Mobilization of Arsenic in the Rat," *Human Toxicology* (July 1987).

5. H. L. Coulter, *Divided Legacy: The Conflict Between Homeopathy and the American Medical Association* (Berkeley: North Atlantic, 1975).

6. T. L. Bradford, *The Logic of Figures or Comparative Results of Homeopathic and Other Treatments* (Philadelphia: Boericke and Tafel, 1900).

Stephen Barrett responds:

Homeopathy became popular during the nineteenth century because its methods were safer than the bleeding, purging, and poisonous mercury compounds used by orthodox physicians of that era. But as these methods were replaced by safe and effective drugs, homeopathy came close to extinction in this country.

Scientific facts are established by repetition and proper interpretation of well-designed studies. As far as I can tell, homeopathy's proponents have carried out very few. Although the Lancet *study appears well designed, it has not been replicated. If it can be replicated, many additional studies will be required to explain the results.*

To gain acceptance by mainstream science, homeopathy will have to change its approach. First, proponents should ask their critics what types of experimental outcomes would be persuasive. Then experiments along these lines should be carried out with safeguards against experimenter fraud. I gave Mr. Ullman a suitable protocol about a year ago, but so far it has not been used.

Alternative practitioners

The series of articles on alternative medicine (Fall 1987) was most interesting and informative. They did not treat one intriguing aspect of the matter, namely, the attitudes and beliefs of the practitioners of alternative therapies. I have been forced into controversy with some local alternative practitioners through an appalling case in which some of them were able to get hold of $20,000 of public money to run a course ostensibly designed to help some of the unemployed gain work. It was alleged that a knowledge of homeopathy would make unemployed people gain a better understanding of themselves and so be more ready for employment.

I have found that the alternative practitioners I have met are not at all apologetic about their services. On the contrary, they think that they are the true health professionals and that their work is of far greater value to the community than that of orthodox practitioners. In evidence of this they adduce the following (one cannot call them reasons):

1. They treat the whole person and not just the immediate symptom (Why did X get cancer?).

2. They treat real illnesses that orthodox medicine misses, such as toxic bowel movement, overactive lymphatic system, and especially acidity (it is curious that no one ever suffers from alkalinity) and toxicity. There is one infallible way of detecting a quack and that is the use of the opening gambit: "The first thing we must do is to purify your bloodstream" or "I do not believe in vaccinations; I

want to keep the blood pure to fight the disease."

3. They do not rely on mere book learning: Their knowledge has been gained by spending hundreds of hours actually examining and treating real patients.

4. If their methods are unscientific, they have access to other sources of knowledge: They feel in their bones that they are right. They have daily evidence that their methods work. They have total conviction.

5. They do not need CT scanners or X-ray machines to diagnose illnesses: They can do it by merely looking into the iris or feeling the soles of the feet. (Dr. Y needed a biopsy to detect cancer. I can do it by talking to the patient.)

6. They do not need expensive medicines to cure illness. They do not rely on vast drug companies making inordinate profits out of human suffering. Moreover, no one has ever suffered an adverse reaction from a homeopathic inoculation. Nature's antibiotic, Kyolic garlic, has no side effects.

7. It is the skeptics who are hidebound and reactionary, who miss the wonderful mind-expanding, natural treatments that are now available. Why do you not ally yourselves with nature instead of fighting it?

8. When asked a sticky one, shut up. If you are an iridologist, refuse to say why you prefer one eye chart out of the 19 in use. If you are a reflexologist, keep quiet on why you are not at war with the iridologists. If you are a homeopath, do not say why you do not despise colonic irrigationists. Do not say why you do not object to pyramids and pendulums on sale in health-food shops.

9. Always remember that you are the real health professional. You provide basic health care. You deal with the important questions of diet and adopting a clean-living lifestyle. You stress the importance of healthy living in every respect.

In the same issue, Paul Kurtz lamented the rise of irrationality, especially in its UFO, Geller, and spiritualist manifestations. In New Zealand we have been spared the worst of these; to my knowledge we have not had a single abductee (yet). We do seem to have an inordinate amount of health quacks. Their number is increasing and also their acceptance.

Keith Lockett
New Plymouth
New Zealand

Tired light

I am prompted by Martin Gardner's "Notes of a Fringe-Watcher" in the Winter 1987-88 issue to relate to your readers a new twisting ritual in the creationist dance. It is not true, as Gardner asserts, that "young-earthers" must assume that "God created light waves on the way from stars and galaxies that did not exist when the light was created."

In fact, one subset of young-earthers holds to the premise that—hold your scientific breath—*the speed of light is not constant,* and that it has, over the (few) millennia, been slowing down. According to this view, the speed of light at creation was much faster than it is now, and thus the light from distant stars traveled most of [whatever distance away creationists believe they are] in the early years before laboratory measurements of the speed of light were available.

This pronouncement is said to be based on a careful examination of the data, which are alleged to show that the measured speed of light has been consistently diminishing. More careful examination of these data is said to indicate a backward extrapolation of the value of the speed of light, which produces an integrated time-of-flight for light from distant stars of less than 10,000 years (surprise!).

I have heard this creationist claim both on TV debates and in written polemics. No reference to the exact source of this stunning analysis was of course given. I suspect that, at worst, the analysis has never in fact been carried out or that, at best, it rests on a prodigious feat of data selection.

The variability of the speed of light makes perfect sense to a mind that has already been seduced into accepting the

variability of the radioactivity rates of carbon isotopes. Thus the constants of the universe become variables in the hands of creation nonscientists in order to produce results, however false, that are consistent with prehistoric myths.

P. C. Hughes
Maple, Ontario

(Such matters were touched on briefly in R. Schadewald's "Creationist Conference Recasts Physics, Cosmology, and Geology," SI, Winter 1983-84.—ED.)

Angelic hosts

Martin Gardner wonders how "Pentecostal televangelist" Jimmy Swaggart arrived at the idea that *one-third* of the angelic hosts were dragged down with Satan when he fell (*SI,* Winter 1987-88).

Swaggart found the story in Rev. 12:3-4, where a "great red dragon . . . drew the third of the stars of heaven and cast them to the earth." Subsequently (v. 9) the dragon is identified as Satan, and it is stated that his angels were cast out with him. Consequently, fundamentalist Christians assume that "the stars of heaven" were angels and that one-third of them fell.

Application of this passage to prehistory is an error. It is clear that the author is describing the birth of Christ ("a man child") and that the fall described took place afterward. He would have been aware of the words attributed to Jesus (Luke 10:18) that the latter had seen Satan fall from heaven like lightning.

Steuart Campbell
Edinburgh, Scotland

Facts and folklore

Two small corrections to otherwise excellent articles in your Winter issue.

First, the Colossus of Rhodes did not straddle the harbor (p. 122). That's a piece of medieval folklore. See L. Sprague de Camp, *The Ancient Engineers* (Doubleday, 1963), pp. 136-137.

Second, *limen* is not the German word for "threshold" (p. 190), but the Latin; the German is *Schwelle.*

Minor points, perhaps—but isn't CSICOP's whole purpose to get the facts straight?

Poul Anderson
Orinda, Calif.

Subliminal tapes

I was sorry to read of Bernard J. Sussman's disappointing experience with subliminal tapes (From Our Readers, *SI,* Winter 1987-88). Is there any well-designed research on the safety and effectiveness of these tapes?

Susan Forthman
Northridge, Calif.

(We would welcome hearing about any such research.—ED.)

Rare medium

The several informative articles in your Winter 1987-88 issue regarding psi phenomena corroborate what I have long believed: A *well medium* is *rare.* (Keep up the good work!)

Randall C. Hulbert, M.D.
Rolling Hills Estates, Calif.

Local, Regional, and National Groups

The local, regional, and national groups listed below have aims similar to those of CSICOP and work in cooperation with CSICOP but are independent and autonomous. They are not affiliated with CSICOP, and representatives of these groups cannot speak on behalf of CSICOP.

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Alabama. Alabama Skeptics, Robert Proctor, Convenor, Dept. of Psychology, Auburn Univ., 4082 Haley Center, Auburn, AL 36849-3501.

Arizona. Tucson Skeptical Society (TUSKS), Ken Morse, Chairman, 2509 N. Campbell Ave., Suite #16, Tucson, AZ 85719.

Phoenix Skeptics, Jim Lippard, Chairman, P.O. Box 62792, Phoenix, AZ 85082-2792.

California. Bay Area Skeptics, Rick Moen, Secretary, 4412 Fulton, San Francisco, CA 94121-3817.

Sacramento Skeptics Society, Terry Sandbek, 4095 Bridge St., Fair Oaks, CA 95628.

Southern California Skeptics, Ron Crowley, Chairman, P.O. Box 5523, Pasadena, CA 91107.

Colorado and Wyoming. Rocky Mountain Skeptics, Béla Scheiber, President, P.O. Box 7277, Boulder, CO 80306.

District of Columbia, Delaware, Maryland, and Virginia. National Capital Area Skeptics, c/o Stanley K. Bigman, 4515 Willard Ave., Apt. 2204 So., Chevy Chase, MD 20815.

Georgia. Keith Blanton, Convenor, 150 South Falcon Bluff, Alpharetta, GA 30201.

Hawaii. Hawaii Skeptics, Alicia Leonhard, Director, P.O. Box 1077, Haleiwa, HI 96712.

Illinois. Midwest Committee for Rational Inquiry, Michael Crowley, Chairman, P.O. Box 997, Oak Park, IL 60303.

Iowa. ISRAP, Co-chairman, Randy Brown, P.O. Box 792, Ames, IA 50010-0792.

Kentucky. Kentucky Assn. of Science Educators and Skeptics (KASES), Chairman, Prof. Robert A. Baker, Dept. of Psychology, Univ. of Kentucky, Lexington, KY 40506-0044.

Louisiana. Mid-South Skeptics, Henry Murry, Chairman, P.O. Box 15594, Baton Rouge, LA 70895.

Massachusetts and New England. Skeptical Inquirers of New England (SINE), David Smith, Chairman, Museum of Comparative Zoology, Harvard University, Cambridge, MA 02138.

Michigan. MSU Proponents of Rational Inquiry and the Scientific Method (PRISM), Dave Marks, 221 Agriculture Hall, Michigan State Univ., East Lansing, MI 48824.

Minnesota. Minnesota Skeptics, Robert W. McCoy, 549 Turnpike Rd., Golden Valley, MN 55416.

St. Kloud ESP Teaching Investigation Committee (SKEPTIC), Jerry Mertens, Coordinator, Psychology Dept., St. Cloud State Univ., St. Cloud, MN 56301.

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Western New York Skeptics, Barry Karr, Chairman, 3159 Bailey Ave., Buffalo, NY 14215.

Ohio. South Shore Skeptics. Page Stephens, Box 5083, Cleveland, OH 44101

Pennsylvania. Paranormal Investigating Committee of Pittsburgh (PICP), Richard Busch, Chairman, 5841 Morrowfield Ave., #302, Pittsburgh, PA 15217.

Texas. Austin Society to Oppose Pseudoscience (A-STOP), Lawrence Cranberg, President, P.O. Box 3446, Austin, TX 78764.

Houston Association for Scientific Thinking (HAST), Steven Schafersman and Darrell Kachilla, P.O. Box 541314, Houston, TX 77254.

North Texas Skeptics, Eddie Vela, Secretary and Treasurer, P.O. Box 815845, Dallas, TX 75381-5845.

West Texas Society to Advance Rational Thought, Co-Chairmen: George Robertson, 516 N Loop 250 W #801, Midland TX 79705; Don Naylor, 404 N. Washington, Odessa, TX 79761.

Washington. Northwest Skeptics, Philip Haldeman, Chairman, T.L.P.O. Box 8234, Kirkland, WA 98034.

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Quebec Skeptics: Raymond Charlebois, Secretary, C.P. 96, Ste-Elisabeth, Quebec, J0K 2J0.

FINLAND. Society for the Scientific Investigation of Claims of the Paranormal, Prof. Seppo Kivinen, Dept. of Philosophy, Univ. of Helsinki, Unioninkatu 40 B, 00170 Helsinki 17.

FRANCE. Comité Français pour l'Etude des Phénomènes Paranormaux, Dr. Claude Benski, Secretary-General, Merlin Gerin, RGE/A2 38050 Grenoble Cedex.

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Surat, Satyasodhak Sabha, Dr. B. A. Prikh, Convenor (Psychology Dept., MTB Arts College.

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Parapsychology Subcommittee: Chairman, Ray Hyman, Psychology Dept., Univ. of Oregon, Eugene, OR 97402.

UFO Subcommittee: Chairman, Philip J. Klass, 404 "N" Street S.W., Washington, D.C. 20024.

The Committee for the Scientific Investigation of Claims of the Paranormal

The Committee for the Scientific Investigation of Claims of the Paranormal attempts to encourage the critical investigation of paranormal and fringe-science claims from a responsible, scientific point of view and to disseminate factual information about the results of such inquiries to the scientific community and the public. To carry out these objectives the Committee:

- Maintains a network of people interested in critically examining claims of the paranormal.
- Prepares bibliographies of published materials that carefully examine such claims.
- Encourages and commissions research by objective and impartial inquiry in areas where it is needed.
- Convenes conferences and meetings.
- Publishes articles, monographs, and books that examine claims of the paranormal.
- Does not reject claims on a priori grounds, antecedent to inquiry, but rather examines them objectively and carefully.

The Committee is a nonprofit scientific and educational organization. THE SKEPTICAL INQUIRER is its official journal.